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# Environmental Compliance Guide

## Guidance Manual for Department of Energy Compliance with the Clean Air Act:

## Prevention of Significant Deterioration

June 1982

**U.S. Department of Energy**
Assistant Secretary for Environmental Protection,
Safety, and Emergency Preparedness
Deputy Assistant Secretary for Environment,
Safety, and Health Office of Environmental Compliance

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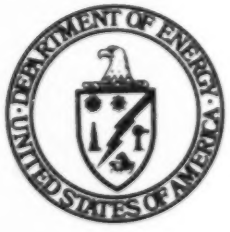

# Environmental Compliance Guide

Guidance Manual for
Department of Energy Compliance
with the Clean Air Act:

Prevention of Significant
Deterioration

## Preface

This guidance manual has been prepared to assist U.S. Department of Energy personnel in developing information and performing analyses required for complying with the Prevention of Significant Deterioration (PSD) requirements of the Clean Air Act (CAA) Pub. L. 95-95. The manual does not add new requirements nor does it alter existing requirements under the PSD permit program and its associated regulations. Rather, the manual is intended to be advisory and to present guidance and information which should assist DOE compliance efforts. Early contact and consultation with appropriate regulatory agencies is essential for adequate compliance with the PSD program. Supplements to this guidance manual will be issued if new regulations are promulgated or the Act is amended.

## ACKNOWLEDGMENTS

This document was prepared for the U.S. Department of Energy, Office of the Assistant Secretary for Environmental Protection, Safety, and Emergency Preparedness, Deputy Assistant Secretary for Environment, Safety, and Health, Office of Environmental Compliance by Lorene L. Sigal of the Environmental Sciences Division, Oak Ridge National Laboratory (operated by Union Carbide Corporation under Contract No. W-7405-eng-26 with the Department of Energy). Gene Smith, Dan de Roeck, and Michael Brandon of the U.S. Environmental Protection Agency, Dr. James Blankenship of the National Forest Service, Dr. James P. Bennett of the National Park Service, and Jerry Goeble from the State of Kentucky provided much useful information. K. M. Oakes of the Environmental Sciences Division and F. C. Kornegay of the Energy Division, Oak Ridge National Laboratory reviewed the manuscript. Environmental Sciences Division Publication No. 2041.



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This document was prepared for the U.S. Department of Energy, Office of the Assistant Secretary for Environmental Protection, Safety, and Emergency Preparedness, Deputy Assistant Secretary for Environment, Safety, and Health, Office of Environmental Compliance by Lockheed E. Sigal of the Environmental Sciences Division, Oak Ridge National Laboratory (operated by Union Carbide Corporation) under Contract No. W-7405-eng-26 with the Department of Energy). Gene Smith, Dan de Roeck, and Michael Brandon of the U.S. Environmental Protection Agency, Dr. James Blankenship of the National Forest Service, Dr. James P. Bennett of the National Park Service, and Jerry Goodin from the State of Kentucky provided much useful information. K. M. Davis of the Environmental Sciences Division and E. G. Kornegay of the Energy Division, Oak Ridge National Laboratory reviewed the manuscript. Environmental Sciences Division Publication No. 2041.

**Abstract**

This manual provides guidance for Department of Energy (DOE) officials who are responsible for complying with the Prevention of Significant Deterioration (PSD) regulations of the Clean Air Act (CAA). The regulations require that new major stationary sources of air pollution or modifications to existing major sources located in attainment or unclassified areas comply with existing National Ambient Air Quality Standards (NAAQS), allowable PSD increments, National Emission Standards for Hazardous Air Pollutants (NESHAP), and the New Source Performance Standards (NSPS). Compliance with the PSD regulations entails a determination of applicability, an analysis of the best available control technology (BACT), an analysis of air quality impacts, an analysis of additional impacts, and a public participation process. This guidance manual supplements and must be used in conjunction with the DOE Environmental Compliance Guide (DOE 1981) and the appropriate PSD manuals from the U.S. EPA and the state. Section 52.21 of the Code of Federal Regulations applies if EPA is the permitting, authority, otherwise, state PSD provisions apply.

## Glossary of Acronyms

| | | |
|---|---|---|
| AQRVs | - | Air Quality Related Values |
| BACT | - | Best Available Control Technology |
| CAA | - | Clean Air Act |
| CFR | - | Code of Federal Regulations |
| DOE | - | U.S. Department of Energy |
| EOP | - | Emission Offset Policy |
| EPA | - | U.S. Environmental Protection Agency |
| FLM | - | Federal Land Manager |
| FWS | - | U.S. Fish and Wildlife Service |
| NAAQS | - | National Ambient Air Quality Standards |
| NCAQ | - | National Commission on Air Quality |
| NESHAP | - | National Emissions Standards for Hazardous Air Pollutants |
| NFS | - | National Forest Service |
| NPS | - | National Park Service |
| NSPS | - | New Source Performance Standards |
| SIP | - | State Implementation Plan |
| VOC | - | volatile organic compounds |

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# 1. Introduction

The Clean Air Act (CAA) (42 U.S.C. 1857 et seq.), as amended (most recently, Pub. L. 95-95), is the principal air pollution control legislation in the United States. The CAA addresses air pollution in two ways: 1) a goal-oriented approach reflected in the ambient air quality standards, and 2) a technology-based approach based on emission standards to control pollutants. Under the CAA, proposed new major sources of air pollution are required to comply either with the Prevention of Significant Deterioration (PSD; Part C of the CAA) program if locating in an attainment or unclassified area or with other new source review requirements (Part D of the CAA), if locating in a non-attainment area (DOE 1982a).

This manual provides guidance for Department of Energy (DOE) project managers who are responsible for projects that involve new and modified major stationary air pollution sources which must comply with Prevention of Significant Deterioration regulations under the CAA. It is one of a series developed by DOE's Office of Environmental Compliance to provide DOE project managers with information on environmental requirements associated with federal permits and approvals for DOE projects. This document complements and should be used in conjunction with the DOE Environmental Compliance Guide (DOE 1981), which contains regulations for implementing the CAA (Vol II, Tab B) and three flow charts outlining the basic steps involved in complying with the CAA [Vol I, Flows III-1(a), (b), and (c)]. Specific guidance is provided on:

- identification of information requirements at each step in the permitting process,
- the environmental assessment aspects of the CAA, and
- suggestions on the approach to be used in collecting, evaluating, and presenting the information.

In addition, contact with the PSD reviewing authority (Appendix A) should be initiated well in advance of the preparation of a PSD application, and the appropriate EPA manuals should be acquired (see reference list). Section 52.21 of the Code of Federal Regulations applies if EPA is the permitting authority, otherwise, state PSD provisions apply.

Example checklists used by the Region IV Office of the Environmental Protection Agency (EPA) in the PSD review process are included in Appendix B for guidance in determining the adequacy of the information needed.

# 2. Background

## 2.1 Overview of the Clean Air Act

The primary purpose of the CAA is to achieve air quality levels protective of public health and welfare. To this end, the Act directs EPA to establish National Ambient Air Quality Standards (NAAQS) for pollutants that could endanger public health or welfare. Such pollutants are called criteria pollutants. Ambient standards are of two types: primary standards established at levels designed to protect public health, and secondary standards designed to protect public welfare. Public welfare includes, but is not limited to, effects on soils, water, crops, vegetation, manmade materials, animals, wildlife, weather, visibility, and climate. The EPA has established final NAAQS for seven of the most ubiquitous air pollutants (Table 1).

Attainment and maintenance of the ambient standards for these criteria pollutants are primarily the responsibilities of the states. Under Sect. 110 of the CAA, each state must submit a State Implementation Plan (SIP) for EPA approval. These plans set forth each state's strategy for attaining and maintaining the standards within the deadlines established by the CAA. The strategy must satisfy the requirements of Sect. 110(a)(2) of the Act, including programs for preventing significant deterioration of air

Table 1. National Ambient Air Quality Standards (NAAQS) for the Seven Criteria Pollutants

| | Monitoring Period | Units | Primary | Secondary |
|---|---|---|---|---|
| $SO_2$ | 3h[a] | $\mu g/m^3$ | | 1300 |
| | 24h[a] | $\mu g/m^3$ | 365 | |
| | Annual | $\mu g/m^3$ | 80 | |
| $NO_2$ | Annual | $\mu g/m^3$ | 100 | 100 |
| TSP | 24h[a] | $\mu g/m^3$ | 260 | 150 |
| | Annual | $\mu g/m^3$ | 75 | 60 |
| CO | 1h[a] | $mg/m^3$ | 40 | 40 |
| | 8h[a] | $mg/m^3$ | 10 | 10 |
| Lead | 3-month average | $\mu g/m^3$ | 1.5 | 1.5 |
| Hydrocarbons (nonmethane)[b] | 3h[a] | $\mu g/m^3$ | 160 | 160 |
| Ozone | 1h[a] | $\mu g/m^3$ | 235 | 235 |

[a]Levels not to be exceeded more than once per year. Annual standards are not to be exceeded.

[b]For use as guide in devising plans to achieve the ozone standard; EPA has proposed to revoke the hydrocarbon NAAQS (46 FR 25655).

SOURCE: 40 CFR 50.4 et seq.

quality in areas of the country cleaner than the air quality standards (i. e., attainment programs) and ensuring the timely clean-up of areas violating the air quality standards (i.e., nonattainment programs). These latter two programs are known, respectively, as Prevention of Significant Deterioration (PSD) and the New Source Review (NSR).

Under CAA, a new major source of air pollution or a modification of a major source is required to comply with either (1) the PSD program for the projects located in attainment or unclassified areas (Sect. 107 of the CAA) for the pollutant(s) in question, or (2) the NSR program, for projects in nonattainment areas. An area may be attainment for one pollutant and nonattainment for another pollutant, so that both the PSD and the NSR requirements can apply concurrently. If a new source of pollutant emissions is major (see Sect. 3) for any regulated pollutant, then it must be determined if there is a significant emission increase for any other regulated pollutant. For each "significant" criteria pollutant, the attainment status of the area in which the source is located must be determined. If the attainment status of the area for any of the "significant" pollutants is considered attainment or unclassified, each significant pollutant must undergo the complete PSD review.

This guidance manual deals only with the PSD permitting process. For sources of pollution locating in nonattainment areas, a separate guidance manual has been prepared (DOE 1982a).

### 2.2 The PSD Permit Process

The broad goals of the PSD program are to prevent significant air quality deterioration in areas of the country which are cleaner than required under the NAAQS (i.e., attainment areas) and, at the same time, to establish suitable margins for industrial growth. In its most fundamental sense, PSD is a permit program. Section 165 of the CAA provides that no major source subject to PSD review may be constructed unless a permit has been issued in accordance with the procedural and substantive PSD requirements of the Act.

The PSD permit application process can be divided into five parts:

- determination of applicability,
- analysis of the best available control technology (BACT),
- analysis of the air quality,
- analysis of the additional impacts (soils vegetation, visibility, and growth), and
- the public participation process.

The applicability determination involves reviewing proposed new and modified sources in terms of their geographic location, size (in terms of emissions), and whether emitted pollutants are subject to PSD. The BACT analysis is done to ensure that the best available control technology is applied to the potential emissions of pollutants from the facility. This analysis provides input data for the other analyses and should be started soon after a source is determined to be subject to PSD review. The air quality analysis includes both modeling and monitoring data and demonstrates that the proposed emissions would not cause or contribute to a violation of any NAAQS or PSD increment. The additional impacts analysis is performed to ensure that emissions would not impair visibility or affect soils and vegetation. The objective of the public participation process is to inform the general public of potential air quality-related impacts and to provide opportunity for comments which may affect the final determination.

To facilitate the process and avoid delays, the PSD reviewing authority should be contacted well in advance of preparing a PSD application. The permitting authority may be a local or state air pollution control agency or the Regional Office of the EPA. Prior to EPA's approval of state PSD programs under the State Implementation Plans, the PSD analysis is carried out, and PSD permits are issued by EPA pursuant to 40 CFR

52.21. The agency is also authorized to delegate all or part of this authority to the states. Table 2 lists those states having PSD authority as of June 1982. The EPA has review authority in the remaining states. DOE must contact the appropriate state for its specific PSD requirements.

The time necessary for completion of a PSD application will vary depending on the circumstances surrounding each application and the reviewing authority. However, once an acceptable, completed PSD permit application is filed, the reviewing authority must make a final determination on the application within one year. The total time for approval of a permit may be extended one year if preconstruction monitoring is required prior to the start of the review period.

### 2.2.1 PSD Area Classification

To prevent significant deterioration of the air quality in the relatively "clean air areas" of the country (those in attainment of the NAAQS or those unclassified for lack of data), EPA proposed a classification plan whereby each state assigned its lands to one of three classifications, Class I, II, or III. The most restrictive increments are for Class I areas (national parks and wilderness areas). All other areas (most of the country) were initially designated Class II, subject to possible future redesignation as Classes I or III. In Class III areas, there is greater potential for industrial growth. The PSD regulations have designated "maximum allowable increases" or increments for only sulfur dioxide ($SO_2$) and particulate matter (PM) pollution for each of these classifications (Table 3). The allowable increments are defined as the maximum allowable increases in ambient air concentrations over the baseline concentrations that are not to be exceeded more than once per year. The baseline concentrations are based on ambient levels existing on the earliest date after August 7, 1977, on which the first complete PSD application was submitted. For $SO_2$ and PM, both increment and NAAQS exist for annual and 24-hour periods. In addition, a 3-hour allowable increment and a NAAQS exist for $SO_2$.

### 2.2.2 Noncriteria Pollutants

The present PSD regulations require an ambient air quality analysis for all regulated pollutants emitted in amounts in excess of specified limits. This includes the criteria pollutants and the pollutants for which no ambient standards exist (noncriteria pollutants) but which are subject to emission limitations under the New Source Performance Standards (NSPS) and the National Emissions Standards for Hazardous Air Pollutants (NESHAP).

The New Source Performance Standards (NSPS) are the maximum allowable emissions for new sources in selected industrial categories. They seek to keep pollution from new sources at a minimum. Appendix C summarizes the status of the standards of performance. Energy activities for which NSPS standards have been established are utility boilers, coal preparation plants, and oil refineries. The EPA is currently working on expanding the regulations to industrial boilers. For emission levels and complete details concerning a standard, the Federal Register cited in Appendix C should be consulted. In addition, EPA, at the request of Congress, has also published a prioritized list of 47 major source categories, many of which may emit significant amounts of volatile organic compounds (VOC). This list, which is shown in Appendix D, is essentially an advance notice of future standards development.

The National Emission Standards for Hazardous Air Pollutants (NESHAP) are emission limitations on new and existing sources of asbestos, beryllium, mercury, and vinyl chloride (40 CFR 61, 1981). Table 4 summarizes respective emissions standards for these four chemicals (see also Appendix C). Under 40 CFR 61.07 (1981), the owner or operator of any new source or modification subject to the NESHAP must submit to the EPA an application for construction or modification.

In addition, Section 112 of the Act requires EPA to list hazardous air pollutants for which it intends to establish national emissions standards. The EPA compiled a list of 43 Chemicals Under Assessment (Table 5) that it believes represents priority candidates for possible regulations. Additional chemicals may be added to this list in the future.

Table 2. States having PSD permitting authority

| | |
|---|---|
| Alabama | Nebraska |
| Arkansas | New Hampshire |
| Delaware | North Carolina |
| District of Columbia | North Dakota |
| Florida | Ohio |
| Georgia | Oklahoma |
| Illinois | Pennsylvania |
| Indiana | South Carolina |
| Kentucky | Tennessee |
| Louisiana | Texas |
| Maine | Utah |
| Maryland | Vermont |
| Massachusetts | Virginia |
| Michigan | West Virginia |
| Minnesota | Wisconsin |
| Mississippi | Wyoming |
| Missouri | |

Table 3. Allowable PSD increments ($\mu g/m^3$)

| | Class I | Class II | Class III |
|---|---|---|---|
| Sulfur Dioxide | | | |
| • annual | 2 | 20 | 40 |
| • 24-hour | 5[a] | 91[a] | 182[a] |
| • 3-hour | 25[a] | 512[a] | 700[a] |
| Total Suspended Particulate Matter | | | |
| • annual | 5 | 19 | 37 |
| • 24-hour | 10[a] | 37[a] | 75[a] |

[a]Not to be exceeded more than once a year.

SOURCE: 40 CFR 52.21

Table 4. National Emissions Standards for Hazardous Air Pollutants

| Pollutant | Standard (not to be exceeded) |
|---|---|
| Asbestos | No visible emission to the outside air |
| Beryllium | |
| Rocket firing* | 75 μg-min/$m^3$ within 10-60 min |
| Other sources | 10 g/24h |
| Mercury | 2300 g/24h |
| Vinyl Chloride | 10 ppm or 0.2 g/kg product** |

*Emission shall not cause ambient levels, accumulated during any 2 consecutive weeks, to exceed this value. If combustion products are collected in a closed tank, emissions from the tank shall not exceed 2 g/h and a maximum of 10 g/day.

**Varies with source type; see 40 CFR 61.62, 61.63, 61.64, 61.65.

SOURCE: 40 CFR 61 (1981).

Table 5. Chemicals under assessment for possible regulation by EPA

| | |
|---|---|
| Acetaldehyde | Maleic Anhydride |
| Acrolein | Manganese |
| Acrylonitrile | Methyl Chloroform |
| Allyl Chloride | Methyl Chloride |
| Benzyl Chloride | Methyl Iodide |
| Bis (Chloromethyl) Ether | Nickel |
| Carbon Tetrachloride | Nitrobenzene |
| Chlorobenzene | 2-Nitropropane |
| Chloroform | N-Nitrosodiethylamine |
| Chloromethylmethyl Ether | Nitrosethylurea |
| Chloroprene | Nitrosomethylurea |
| o-,m-,p-Cresol | Nitrosomorpholine |
| p-Dichlorobenzene | Perchloreoethylene |
| Dimethyl Nitrosamine | Phenol |
| Dioxin | Polychlorinated Biphenyls |
| Epichlorohydrin | Propylene Oxide |
| Ethylene Dibromide | Toluene |
| Ethylene Dichloride | Trichloroethylene |
| Ethylene Oxide | Vinylidene Chloride |
| Formaldehyde | o-,m-,p-Xylene |
| Hexachlorocyclopentadiene | |

SOURCE: National Commission on Air Quality (NCAQ) 1981.

## 3. DOE Compliance

### 3.1 Applicability

The overall goals of applicability are to determine: 1) if a proposed construction project is subject to PSD review and 2) what types of analyses are to be performed if PSD review is required. Table 6 lists steps to determine applicability for new and modified sources.

The first step in complying with the PSD program (as outlined in Sect. 2.2) is to determine if a proposed new or modified source is subject to the PSD regulations (Fig. 1). For PSD to apply, there are two general requirements. First the proposed source must be located in a PSD area, (i.e., an area designated as "attainment" or "unclassified"). Second, the proposed construction must be either a new major stationary source (including a modification to a minor source where the modification would constitute a major stationary source by itself) or the modification of an existing major stationary source. To characterize a source as major or nonmajor, each regulated pollutant emitted by the source must be quantified on a "ton per year" basis. Table 7 summarizes all pollutants regulated under the CAA (40 CFR 50, 60, 61; 1981).

A new or existing stationary source is considered major if it has the "potential to emit" 100 tons (91 Mg) per year or more of any regulated pollutant and is included in one of the specified industrial categories (Table 8), or any source which has the potential to emit 250 tons (230 Mg) per year or more of any regulated pollutant. A "modification" refers to a physical or operational change at an existing major stationary source. Where such a change would result in a "significant net emissions increase" of any regulated pollutant ("netting" is described in Appendix E), it is considered a major modification and is subject to PSD review.

The term "potential to emit" is defined as the capability at maximum design capacity to emit a pollutant after air pollution control equipment has been applied and all federally[1] enforceable permit restrictions (e.g., hours of operation, type or amount of material processed or stored) have been considered. Quantifiable fugitive emissions are included (i.e., emissions that can not reasonably pass through a stack, vent, chimney, or other functionally equivalent opening). For new sources, the potential emissions are considered to be equal to proposed allowable emissions. Values for individual emission units should be estimated and summed for the total "potential to emit" at a source. Methods of estimating the potential to emit may include:

- federally enforceable allowable emission limits,
- performance test data on similar units,
- emissions data and guarantees from the equipment vendor,
- emission limits and test data from EPA documents, including background information documents for new source performance standards, national emissions standards for hazardous air pollutants, and Section 111(d) standards for designated pollutants,
- AP-42 emission factors (see Table A-1; EPA 1977),
- Emission factors from the technical literature, and
- State emission inventory questionnaires for comparable sources.

---

[1]Changes in the existing regulations are expected under which emissions limitations would be recognized as enforceable to the extent that they can be enforced by either federal, state, or local governments, and are discoverable by the EPA and/or interested persons.

Table 6. Steps to determining applicability

| |
|---|
| **New Sources** |
| 1. Define the source. |
| 2. Estimate the potential to emit of the source. |
| 3. Determine if the source is a major stationary source (use Applicability Test 1). |
| 4. Determine what review requirements must be met (use Applicability Test 3 on potential emissions totals). |
| **Modified Sources** |
| 1. Define the existing source and understand the proposed modification. |
| 2. Estimate the potential to emit of the existing source. |
| 3. Determine if the existing source is a major stationary source (use Applicability Test 1). |
| 4. Determine the net emissions change from the modification considering creditable contemporaneous changes. |
| 5. Determine if a significant new emissions change occurred (use Applicability Test 2 on the net emission increases). |
| 6. Determine what review requirements must be met (use Applicability Test 3 on the net emissions increases for each pollutant). |
| 7. Evaluate exemptions. |

Table 7. Air Pollutants Regulated Under the Clean Air Act

| | |
|---|---|
| Asbestos | Lead* |
| Beryllium | Mercury |
| Carbon Disulfide | Methyl Mercaptan |
| Carbonyl Disulfide | Oxides of Nitrogen* |
| Carbon Monoxide* | Ozone* |
| Dimethyl Disulfide | Particulate Matter* |
| Dimethyl Sulfide | Sulfuric Acid Mist |
| Fluorides | Sulfur Dioxide* |
| Hydrocarbons* | Vinyl Chloride |
| Hydrogen Sulfide | |

*Denotes Criteria Pollutants

SOURCE: National Ambient Air Quality Standards (40 CFR 50), New Source Performance Standards (40 CFR 60), and National Emissions Standards for Hazardous Air Pollutants (40 CFR 61).

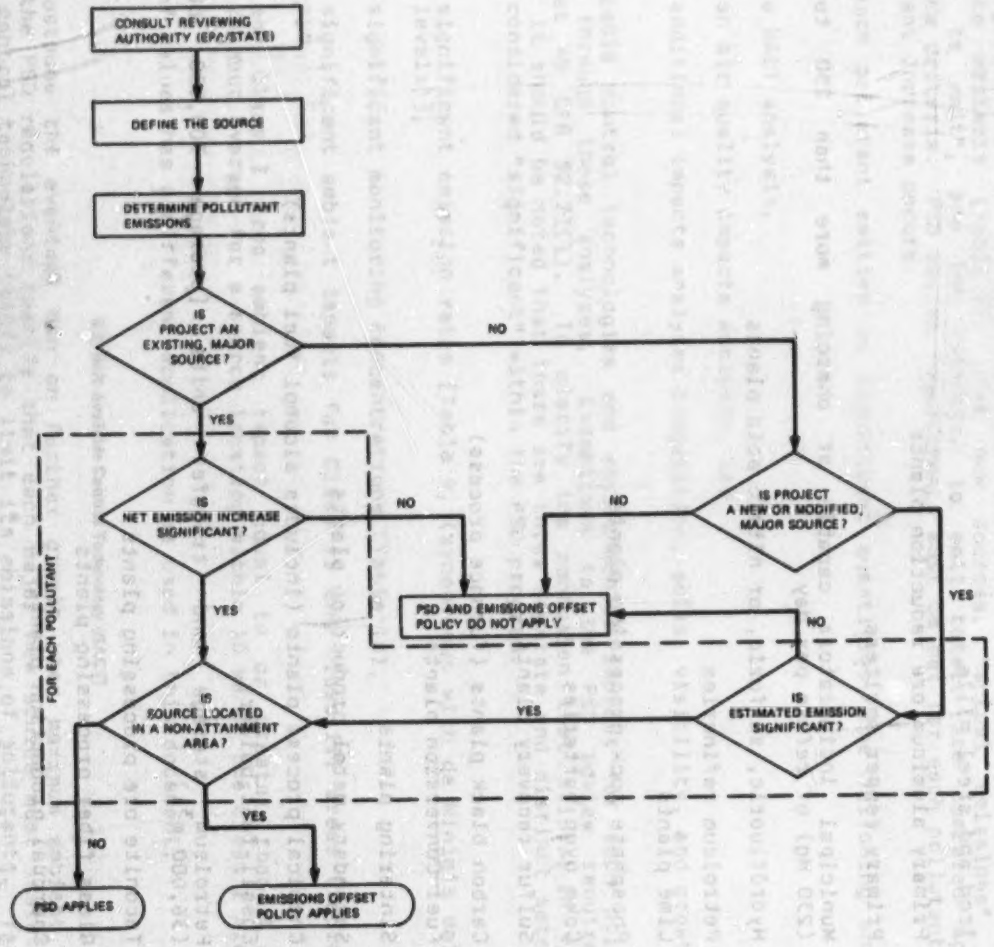


**Figure 1. PSD applicability flow.**

Table 8. Major stationary source categories (NSPS) subject to PSD review

| |
|---|
| Coal cleaning plants (with thermal dryers) |
| Kraft pulp mills |
| Portland cement plants |
| Primary zinc smelters |
| Iron and steel mills |
| Primary aluminum ore reduction plants |
| Primary copper smelters |
| Municipal incinerators capable of charging more than 250 tons (230 Mg) of refuse per day |
| Hydrofluoric, sulfuric, or nitric acid plants |
| Petroleum refineries |
| Lime plants |
| Phosphate rock processing plants |
| Coke oven batteries |
| Sulfur recovery plants |
| Carbon black plants (furnace process) |
| Fuel Conversion plants |
| Sintering plants |
| Secondary metal production plants |
| Chemical process plants (includes alcohol fuel plants) |
| Fossil-fuel boilers |
| Petroleum storage and transfer units [storage 300,000 bbl (36,000 $m^3$)] |
| Taconite ore processing plants |
| Glass fiber processing plants |
| Charcoal production plants |
| Fossil fuel-fired steam electric plants [250 x $10^6$ Btu (260 x $10^9$ Joules) per hour heat input] |

SOURCE: 40 CFR 52.21, 1981.

The EPA PSD Workshop Manual (EPA 1980) describes three applicability tests to determine if PSD review is necessary for a proposed new source or modification. Applicability Test 1 is used to determine if a source is major. For proposed modifications to existing major sources, Applicability Test 2 is used to determine if a significant net emission increase will occur. The second applicability test compares the net change ("netting" is discussed in Appendix E) to the significant emission rates (Table 9). Both tests 1 and 2 are performed for each regulated pollutant emitted by the proposed modification. Emission increases at existing non-major sources must also be examined for applicability to PSD review. In such instances, the net emission increase or potential to emit for each pollutant from only the modification is compared to the 100/250 tons (91/230 Mg) criterion.

The level of PSD review required is determined by Applicability Test 3. Like Test 2, it compares the net actual emission increase for each pollutant against the significance criteria (Table 9). For new sources, "actual emissions" equal the "potential to emit", and the potential to emit totals are compared against the significance criteria. PSD review requirements must be met for each pollutant for which a significant increase occurs.

For each pollutant emitted in significant quantities, the following analyses are performed:

1. a BACT analysis,
2. an air quality impacts analysis, and
3. additional impacts analyses (vegetation, soils, visibility, and growth).

The applicable control technologies and environmental impacts for each pollutant are evaluated through these analyses. Exemptions to the PSD review requirements are outlined at 40 CFR 52.21(i). To clarify the confusion that exists in various PSD documents, it should be noted that there are three separate and distinct sets of values which are considered "significant" within the PSD program:

1) significant emission rates [Table 9, (synonymous with de Minimis emission levels)],
2) significant monitoring concentrations (Table 10),
3) significant ambient impacts for Class II and Class III areas (Table 11), and
4) any Class I area ambient impact equal to or greater than 1 $\mu g/m^3$, 24 hour average for a source locating within 10 km of the Class I area.

Each set of values has a different application as used in this document.

### 3.2 Best Available Control Technology (BACT)

To postpone the eventual ban on further growth when maximum ambient levels are reached, the PSD regulations specify that each major new source must install the best available control technology (BACT) to limit its emissions of pollutants. Technological feasibility, direct and residual risks, and the energy and economic costs of emission controls must be considered, as well as the impacts on environmental conditions. BACT determination is required for all pollutants regulated by the Act if the net emissions increase or the potential to emit equals or exceeds the significant emissions rates (Table 9). The analysis must be carried out on a case-by-case basis. Since the BACT analysis determines the control strategy, it also ultimately determines the emissions that cause air quality-related impacts. The BACT analysis and results provide the majority of the input data for both the air quality and the additional impacts analyses and also serve as a source of information for the public. Results of the BACT analysis can show that the applicant is exempt from PSD review altogether.

Table 9. Significant Emission Rates[a]

| Pollutant | Emissions rate (TPY)[b] | Design air quality value (averaging time) ($\mu g/m^3$) |
|---|---|---|
| Carbon monoxide | 100 | |
| Nitrogen oxides | 40 | 2 (annual) |
| Sulfur dioxide | 40 | 14.6 (24-h) |
| Total suspended particulates | 25 | 10.4 (24-h) |
| Ozone (volatile organic compounds) | 40 | |
| Lead | 0.6 | 0.06 (3 months) |
| Asbestos | 0.007 | |
| Beryllium | 0.0004 | |
| Mercury | 0.1 | |
| Vinyl chloride | 1.0 | |
| Fluorides | 3 | |
| Sulfuric acid mist | 7 | |
| Total reduced sulfur (including $H_2S$) | 10 | |
| Reduced sulfur (including $H_2S$) | 10 | |
| Hydrogen sulfide | 10 | |

[a]Significant emission rates are the same as de Minimis emissions levels and are for use in defining the term "significant" in reference to a net emissions increase or the potential of a source to emit any of the listed pollutants at a rate that would equal or exceed the listed values. These values determine the need to review modifications and determine which pollutants require BACT and air quality impact analyses for any new source or modification requiring review.

[b]Tons, (1 Ton = 0.1 Mg) per year.

SOURCE: 40 CFR 52.21

Table 10. Significant monitoring concentrations[a]

| Pollutant | Air quality concentration in $\mu g/m^3$ (averaging time) |
|---|---|
| Carbon monoxide | 575 (8-h) |
| Nitrogen oxides | 14 (annual) |
| Sulfur dioxide | 13 (24-h) |
| Total suspended particulates | 10 (24-h) |
| Ozone | [b] |
| Lead | 0.1 (24-h) |
| Asbestos | [c] |
| Beryllium | 0.0005 (24-h) |
| Mercury | 0.25 (24-h) |
| Vinyl chloride | 15 (24-h) |
| Fluorides | 0.25 (24-h) |
| Sulfuric acid mist | [c] |
| Total reduced sulfur (including $H_2S$) | 10 (1-h) |
| Reduced sulfur (including $H_2S$) | 10 (1-h) |
| Hydrogen sulfide | 0.04 (1-h) |

[a]Air quality concentrations for exempting sources from the monitoring requirements.

[b]No specific air quality concentration for ozone is prescribed. Exemptions are granted when a source's VOC emissions are 100 tons/year.

[c]No satisfactory monitoring technique available at this time.

SOURCE: 40 CFR 52.21.

Table 11. Significant ambient air quality impacts for Class II and III areas[a]

| Pollutant | Averaging time, measuring unit | | | | |
|---|---|---|---|---|---|
| | Annual, $\mu g/m^3$ | 24-hour, $\mu g/m^3$ | 8-hour, $mg/m^3$ | 3-hour, $\mu g/m^3$ | 1-hour, $mg/m^3$ |
| $SO_2$ | 1 | 5 | - | 25 | - |
| PM | 1 | 5 | - | - | - |
| $NO_2$ | 1 | - | - | - | - |
| CO | - | - | 0.5 | - | 2 |

[a]For use in defining significant impact areas after approved dispersion modeling of the proposed emissions. The impact area also determines compliance with applicable air standards and increments. Impact areas should be established for each applicable pollutant for each averaging time for which a NAAQS exists.

SOURCE: 40 CFR Part 51, Appendix S

The first step in the BACT process (Fig. 2) is to determine which pollutants emitted by the source must be analyzed (for a major modification, see example, Table E-1, Appendix E). The applicable federal regulations (NAAQS, NSPS, and/or NESHAPs) must be identified and the projected compliance with the regulation(s) determined. Nonsignificant pollutants should be reviewed as well, as they may become significant under alternative control strategies.

In the second step, DOE defines the units of the source that must apply BACT (this includes units that are sources of fugitive emissions) and presents the relevant data. Often, units (such as combustion sources) must undergo BACT analysis for more than one pollutant. The applicant provides the information listed below for each pollutant in control strategy matrices (Table 12).

1. Proposal of a BACT control strategy that is practicable and enforceable for each applicable pollutant and emission point.

2. Presentation of alternative control strategies that could achieve a higher degree of emission control. (If none are available, so state). Control strategies which can be included are existing, transferable, and innovative technologies and process change.

3. Rationale for why the alternative strategies were not selected, discussed in terms of the following impacts:

   a. Energy - focus on primary impacts (amount, type, and source of energy used) due to the application of the control strategies.

   b. Environmental - quantify, where possible, the impacts on air and water pollution, solid waste disposal, use of valuable resources (e.g., water), and other environmental impacts due to the application of the BACT strategy and alternatives.

   c. Economic - focus on the direct economic impacts on the source in terms of the incremental costs of installation and operation of the alternatives as compared to the BACT strategy, the effects of the alternatives on unit production costs, and impacts on local economic growth. Comparable units should be used for describing the alternatives.

4. Analysis of control equipment to ensure proper design.

The Regulation and BACT Review checklist (Appendix B) outlines the required information for completing the BACT part of the application for a PSD permit.

### 3.3 Air Quality Analyses

#### 3.3.1 Introduction

Under Section 165 of the Act, air quality analysis requires monitoring and modeling for evaluation and prediction of the impact of emissions from the proposed source on ambient air quality. As many as five separate, though related, atmospheric analyses may be required. These include:

1) demonstration that new emissions will not result in ambient air concentrations in violation of either the applicable NAAQS or PSD increment;

2) analysis of air quality impacts projected for the area as a result of growth associated with the facility;

3) pre- and post-construction monitoring of air quality;

4) analysis of the air pollution impact on soils, vegetation and visibility in potentially affected areas; and

5) special visibility impact analysis where Class I areas will be affected.

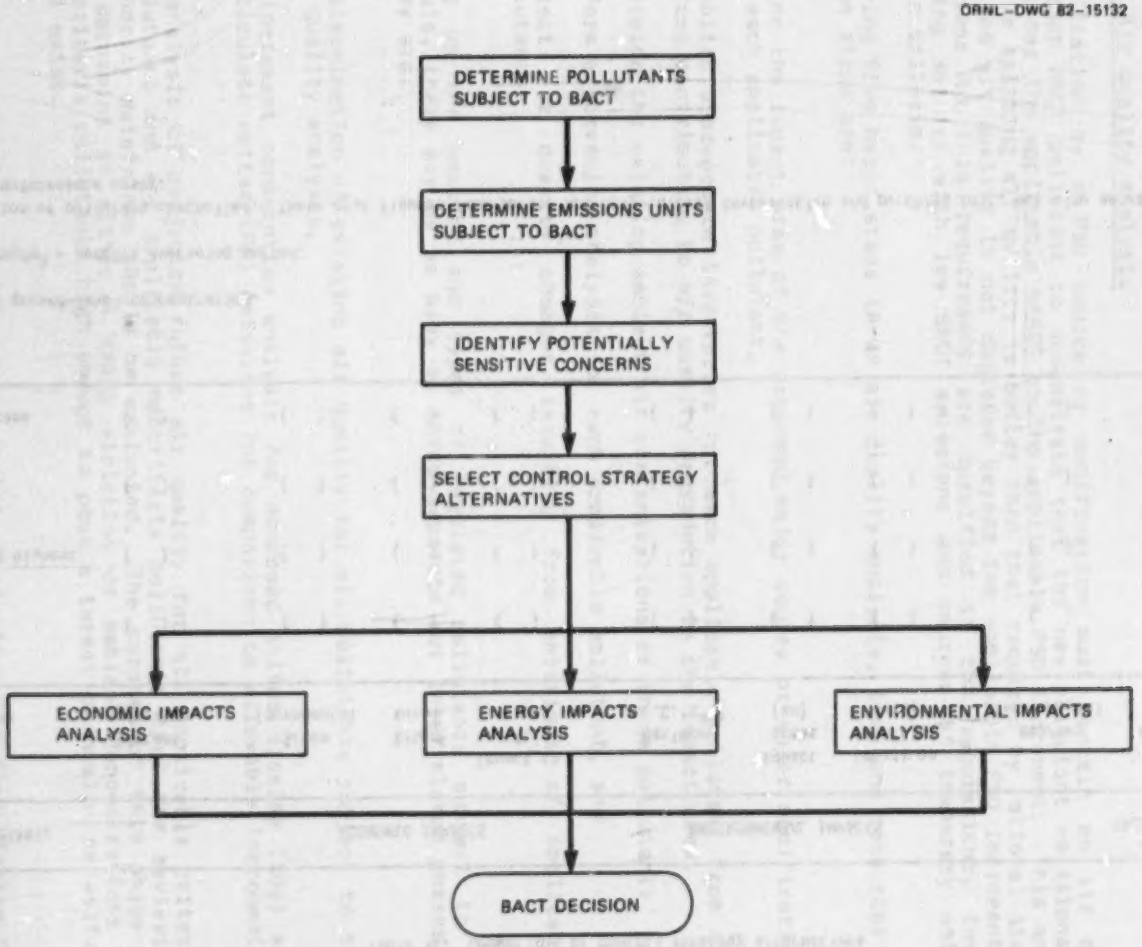


Figure 2. BACT flow chart.

Table 12. Comparison of control strategy alternatives

| POLLUTANT: _____ | ECONOMIC IMPACTS | | | | ENVIRONMENTAL IMPACTS | | | ENERGY IMPACTS | | |
|---|---|---|---|---|---|---|---|---|---|---|
| Control alternative | Percent reduction | $/ton Incremental | $/ton[c] total | Impact on sensitive issues | Maximum G.L.C.'s[a,b] | Impact areas (km) | Impact on sensitive issues | Btu/ton incremental | Btu/ton total | Impact on sensitive issues |
| 1. Best | ( ) | ( ) | ( ) | ( ) | ( ) | ( ) | ( ) | ( ) | ( ) | ( ) |
| 2. Second highest | ( ) | ( ) | ( ) | ( ) | ( ) | ( ) | ( ) | ( ) | ( ) | ( ) |
| 3. Other | ( ) | ( ) | ( ) | ( ) | ( ) | ( ) | ( ) | ( ) | ( ) | ( ) |
| 4. Base case | ( ) | ( ) | ( ) | ( ) | ( ) | ( ) | ( ) | ( ) | ( ) | ( ) |

[a]G.L.C. is ground-level concentration.

[b]Units of $\mu g/m^3$ - specify averaging period.

[c]Cost per ton of pollutant controlled. These cost figures incorporate not only initial installation and purchase cost, but also annual costs including expected maintenance costs.

Guidance for meeting the various requirements of the PSD regulations related to atmospheric analyses can be found in the EPA Prevention of Significant Deterioration Workshop Manual (1980). Regional offices of the EPA and the states may also have guidance documents available. Because each air quality analysis is unique, a single method to ensure that these analyses demonstrate compliance with all standards and increments is not available. Guidelines for monitoring and modeling are available (see references) from the Library Service Office (MD-35), U.S. Environmental Protection Agency, Research Triangle Park, NC 27711; and the National Technical Information Service, 5285 Port Royal Road, Springfield, VA 22161.

### 3.3.2 Ambient Air Quality Analysis

Each application by a PSD source or modification must contain an air quality analysis for each BACT pollutant to demonstrate that the new pollutant emissions would not violate either the applicable NAAQS or the applicable PSD increment. This analysis ensures that the existing air quality is better than that required by national standards and that baseline air quality is not degraded beyond the applicable PSD increment. Two narrow exemptions to this requirement are specified in the regulations, involving certain existing sources with low BACT emissions and sources of temporary emissions meeting certain criteria.

By following five basic steps in an air quality analysis, time and resources can be minimized. The steps are:

- define the impact area of the proposed major source or major modification for each applicable pollutant,
- establish appropriate inventories for each applicable pollutant from all sources contributing to air quality degradation in the impact area,
- determine the existing ambient air concentrations of those pollutants,
- perform a screening analysis for each applicable pollutant, and
- project air quality changes resulting from emissions of applicable pollutants.

Depending on the amounts and types of regulated pollutants subject to an air quality analysis, there may be as many as three separate but interrelated phases of the analysis. They are:

1. a determination of existing air quality for all pollutants subject to the air quality analysis,
2. an increment consumption analysis for proposed sulfur dioxide ($SO_2$) and particulate matter (PM) emissions for comparison to allowable increments, and
3. an analysis of projected future air quality for all applicable criteria pollutants and any applicable noncriteria pollutants that the reviewing authority determines should be evaluated. The purpose of this phase is to determine if either a NAAQS violation or ambient concentrations of noncriteria pollutants high enough to pose a threat to health or welfare will exist.

There are various ways to accomplish an air quality analysis. The flow diagram (Fig. 3) suggests one route. The application for a PSD permit must contain all of the information needed to analyze the air quality criteria. The reviewing authority will check the assumptions and calculations presented in the application and will provide comment.

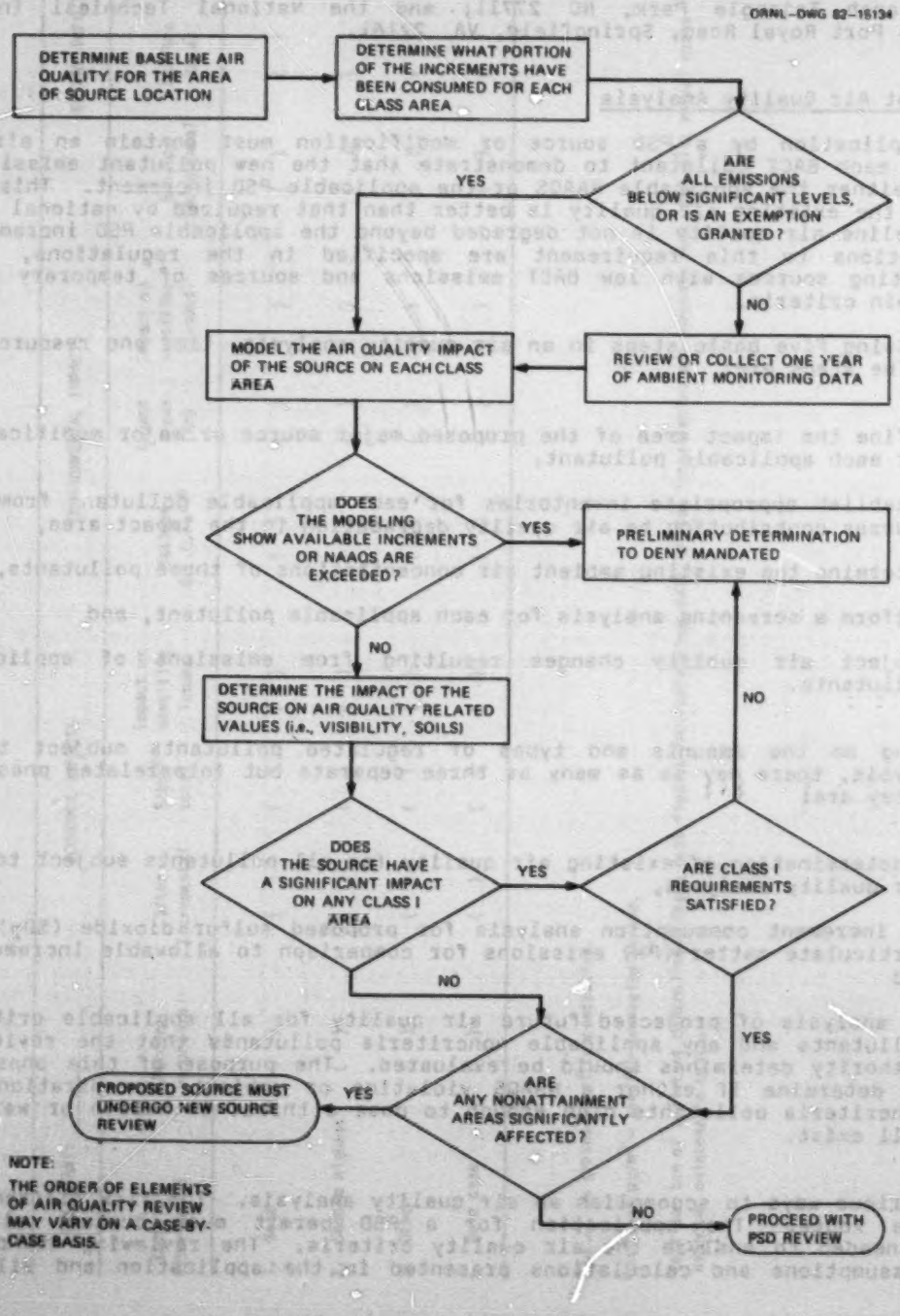
ORNL-DWG 82-16134
DETERMINE BASELINE AIR QUALITY FOR THE AREA OF SOURCE LOCATION
DETERMINE WHAT PORTION OF THE INCREMENTS HAVE BEEN CONSUMED FOR EACH CLASS AREA
ARE ALL EMISSIONS BELOW SIGNIFICANT LEVELS, OR IS AN EXEMPTION GRANTED?
YES
NO
MODEL THE AIR QUALITY IMPACT OF THE SOURCE ON EACH CLASS AREA
REVIEW OR COLLECT ONE YEAR OF AMBIENT MONITORING DATA
DOES THE MODELING SHOW AVAILABLE INCREMENTS OR NAAQS ARE EXCEEDED?
YES
PRELIMINARY DETERMINATION TO DENY MANDATED
NO
DETERMINE THE IMPACT OF THE SOURCE ON AIR QUALITY RELATED VALUES (i.e., VISIBILITY, SOILS)
NO
DOES THE SOURCE HAVE A SIGNIFICANT IMPACT ON ANY CLASS I AREA
YES
ARE CLASS I REQUIREMENTS SATISFIED?
NO
YES
PROPOSED SOURCE MUST UNDERGO NEW SOURCE REVIEW
YES
ARE ANY NONATTAINMENT AREAS SIGNIFICANTLY AFFECTED?
NO
PROCEED WITH PSD REVIEW
NOTE:
THE ORDER OF ELEMENTS OF AIR QUALITY REVIEW MAY VARY ON A CASE-BY-CASE BASIS.

**Figure 3. Air quality analysis flow chart.**

### 3.3.2.1 Ambient air monitoring

To demonstrate that the new pollutant emissions will not violate the applicable standards, most new major PSD sources must monitor the existing air quality for each pollutant that it would have the potential to emit in a significant amount (Table 9). For major modifications to existing sources, monitoring is necessary if there is a significant net emissions increase. The net increase in a pollutant that a proposed modification might generate is calculated using the following formula:

Net increase = change in actual emissions from the proposed new and modified emission units

- creditable contemporaneous decreases,

+ creditable contemporaneous increases.

Quantifying the net increases (or decreases) for modifications is complicated; the conditions and terms applicable to "netting" are outlined in the EPA PSD Workshop Manual (1980; see also Appendix E).

The monitoring program must follow the Ambient Monitoring Guidelines for Prevention of Significant Deterioration (EPA 1980). The DOE may need to acquire the ambient monitoring data itself, or data may be available from the state or other sources. However, the data must be demonstrated to be sufficient, reliable, and representative. Table 13 outlines the minimum content of a monitoring plan.

The requirement to monitor existing air quality may not apply to pollutants for which the new source or modification would cause impacts less than the significant monitoring concentrations (Table 10) or to situations where the background concentration of the pollutants is below the significant apparent threat to an applicable PSD increment or NAAQS based on modeling alone or when there is no question of adverse impact on a Class I area. When monitoring data are required, DOE must provide ambient monitoring data that represent air quality levels in the year preceding the PSD application. Where existing data are not judged representative or adequate, then DOE must conduct its own monitoring program. Typically, monitoring data are required for large-scale projects, and for projects that will impact a Class I area, a nonattainment area, or an area where the PSD increments are violated. Post-construction monitoring can also be required to determine the impacts of source emissions on the local area (see 40 CFR 60.49 for sampling requirements).

### 3.3.2.2 Baseline data and increment consumption

The PSD applicant must demonstrate that the proposed emissions of $SO_2$ and PM together with emissions of $SO_2$ and PM from other sources in the area will not violate the allowable PSD increments and the NAAQS. The concentrations of $SO_2$ and PM in ambient air in the impact area as of the baseline date plus the PSD increment concentrations (Table 3) are equal to the permissible total ambient concentrations of the two pollutants. However, the permissible concentrations cannot exceed the NAAQS for the two pollutants. The baseline date is that date after August 7, 1977, on which the first complete PSD application is received by the appropriate agency.

The baseline concentration in the impact area is determined by modeling the "actual emissions" representative of existing sources in the area on the applicable baseline date. In general, actual emissions as of a particular date equal the average rate (in tons per year) at which the unit actually emitted the pollutant during the 2-year period preceding the baseline date and which represented normal operation.

The analysis compares the results of modeling the proposed allowable emissions with the permissable total concentrations to determine if the source would violate the allowable PSD increment. If a proposed source will consume a major portion of the allowable increment, then post-construction monitoring may be necessary as determined by the permitting authority. Page 4 of the Ambient Monitoring Guideline (EPA 1980) provides examples of when a permitting authority may require post-construction monitoring.

Table 13. Minimum Content of a Monitoring Plan

I. NETWORK DESCRIPTION

- Topographical description
- Land-use description
- Topographical map of proposed source and environs (including location of existing sources, roadways, and monitoring sites)
- Climatological description
- Wind rose (if available)
- Location and rationale of air quality/meteorological monitors

II. SAMPLING PROGRAM DESCRIPTION

- Time periods for which pollutant(s) will be measured
- Rationale for location of monitors (include modeling results and analysis of existing sources in the area)
- Rationale for joint utilization of monitoring network by other PSD sources

III. MONITOR SITE DESCRIPTIONS

- Universal Transverse Mercator (UTM) coordinates
- Height of sampler (air intake)
- Distance from obstructions and heights of obstructions
- Distance from other sources (stationary and mobile)
- Photographs of each site (five photos: one in each cardinal direction looking out from each existing sampler or where a future sampler will be located. Ground cover should be included in a close-up photograph)

IV. MONITOR DESCRIPTION

- Name of manufacturer
- Description of calibration system to be used
- Type of flow control and flow recorder

V. DATA REPORTING

- Format of data submission
- Frequency of data reporting

VI. QUALITY ASSURANCE PROGRAM

- Calibration frequency
- Independent audit program
- Internal quality control procedures
- Procedures for data precision and accuracy calculation

3.3.2.3 Air quality modeling

To determine if the proposed emissions will violate any applicable standards or increments, dispersion modeling is used to define the impact area and to show if the proposed emissions will have a significant impact. Table 11 gives the values of significant ambient impacts. If preliminary dispersion modeling (i.e., screening analysis) shows that a criteria pollutant will have no significant impacts, further air quality analysis of that pollutant will generally not be required unless the source is near a Class I area. In that case, an air quality analysis for PM and/or $SO_2$ may be required if the proposed emissions are expected to exceed 1 $\mu g/m^3$ on a 24-h basis in the Class I area.

If an air quality impact analysis is necessary, DOE must:

1) define the impact area,

2) compile an inventory of existing emissions,

3) determine the existing air quality,

4) perform a screening analysis, and

5) determine the projected air quality.

In general, DOE should contact the reviewing agency for advice on:

- the appropriate dispersion model,
- adequate and representative meteorological data,
- engineering input (i.e., stack heights, emission rates, etc.), and
- techniques and assumptions to be used in the analysis.

The latest revisions of the EPA Guideline on Air Quality Models (EPA 1978) and the Guidelines for Air Quality Maintenance Planning and Analysis, Volume 10 (EPA 1977) should be consulted.

### 3.4 Additional Air Quality Analysis

All applicants requiring a PSD permit must prepare an analysis of additional impacts for each pollutant under review such as the analysis described in 40 CFR 52.21(o) or other corresponding state PSD provisions. This analysis is concerned with the potential for air pollution impacts on soils, vegetation with significant commercial or recreational or recreational value, and visibility caused by both direct emissions from the new major source or modification under review and also the projected quantifiable secondary emissions resulting from associated residential, commercial, or industrial growth.

The depth of the analysis is dependent on the quantity of emissions, the existing air quality, and the sensitivity of the local soils, vegetation, and visibility. The analysis should provide the public with a well-documented assessment of the relevant potential environmental air pollution impacts.

Although there is no specific format for the additional impacts analysis, it consists of three component analyses: 1) a growth analysis, 2) a soils and vegetation impact analysis, and 3) a visibility impairment analysis.

### 3.4.1 Growth Analysis

The growth analysis is considered first because it becomes the basis for determining the extent of air pollution effects in the impact area. There are three elements to develop:

- a projection of the associated industrial, commercial, and residential growth that will occur in the area,
- an estimate of the air pollution emissions generated by associated permanent growth, and
- an air quality analysis which includes these estimates.

In regards to element one, DOE must assess the ability of existing residential, commercial, and industrial services in the area to support the new source or major modification. This information is generally available from state agencies, regional planning offices, the local Chamber of Commerce, environmental impact statements on projects in the area, and PSD applications previously prepared by other applicants. The next step is to predict how much new growth must occur to support the new source or major modification. The amount of residential growth will depend on the size of the available work force, the number of new employees, and the availability of housing in the area. Industrial growth should consider companies providing goods, services, and maintenance, and any other large facilities necessary for the operation of the source or modification under review.

Once completed, DOE then develops an estimate of the type and amount of air pollution which would likely evolve from the permanent residential, commercial, and industrial growth. Excluded from consideration are emissions from both temporary and mobile sources. The DOE should generate emissions estimates by consulting such sources as manufacturer's specifications and guidelines (AP-42), other applications, and by comparing estimates of emissions with those of existing facilities.

The projected air quality is estimated by combining the air pollution estimates associated with growth with the pollution emissions expected from the source or modification itself. The combined estimate serves as the input to the air quality analysis. The output, after modeling, is a prediction of the ground-level concentration of pollutants generated by the source and any associated growth.

### 3.4.2 Soils and Vegetation Analysis

The second analysis is designed to predict air pollution impacts on vegetation having significant commercial or recreational value and soils. These effects can be immediate and direct as a result of high ambient concentrations of pollutants, or they can be subtle and indirect as a result of exposure to pollutants over a long period of time. The latter condition (e.g., acid deposition) is the most insidious, the most difficult to quantify, and the most difficult to control. A suggested approach to the analysis is to survey and map the soil and vegetation types in the impact area, overlay the modeling results of the air quality analysis, and assess the impacts of the projected air pollution. Particular attention should be paid to sensitive vegetation and soil types. Guidelines to air pollution effects on vegetation and wildlife are found in Impacts of Coal-fired Power Plants on Fish, Wildlife, and Their Habitats (FWS 1978) and Diagnosing Vegetation Injury Caused by Air Pollution (EPA 1978). Soil and vegetation surveys are often available from conservation groups, state agencies, universities, soil conservation survey, and environmental impact statements or assessments.

### 3.4.3 Visibility Impairment Analysis

In the visibility impairment analysis, DOE should be especially concerned with impacts on Class I areas, as well as with impacts in the immediate area of the source. The Clean Air Act specifically requires plans and procedures for maintaining the visual quality in Class I areas (Section 169A; F.R. 45 80084, December 2, 1980). The EPA has

developed a number of documents to assist in preparation of a visibility impairment analysis (see references). For general guidance, the Workbook for Estimating Visibility Impairment (EPA 1980) outlines a screening procedure to expedite the analysis of the emissions impacts on the visual quality of Class I areas which is applicable to other areas as well.

The components of a visibility analysis are:

- An initial screening of emission sources to examine the possibility of visibility impairment.
- If warranted, a more in-depth analysis involving computer models.
- A determination of the visual quality of the area (e.g., scenic vistas).

The screening procedures are applied at three levels. Level 1 is a series of conservative calculations designed to identify those emission sources that have little potential of adversely affecting visibility. Calculated values are compared to standardized screening values. The level 2 procedure is used to estimate impacts during worst-case meteorological conditions and requires more specific information. If warranted, based on levels 1 and 2, level 3 analysis incorporates the plume visibility model (EPA 450/5-80-032) with meteorological and regional data and provides an accurate description of the magnitude and frequency of visibility impairment.

### 3.4.4 Impacts on Class I Areas

If the proposed source or modification might affect a Class I area (maps of these areas are in Appendix F), the applicant should notify the PSD contact person of the appropriate agencies [EPA, National Park Service (NPS), National Forest Service (NFS), and/or FWS, Appendix F] for special guidance on satisfying the requirements of the PSD regulations [40 CFR 52.21(p)]. Under Sect. 163 of the CAA, the Federal Land Manager (FLM) and the Federal official charged with direct responsibility for managing the lands are notified by EPA or the state if a major new source or modification is to be located near a Class I area (generally within 100 km) or if the pollutants would potentially violate the Class I increments or effect the air quality related values (AQRVs) of a Class I area. Mandatory Class I areas include: (1) international parks, (2) national wilderness areas and national memorial parks larger than 5000 acres (2023 ha); and (3) national parks larger than 6000 acres (2428 ha) which existed on August 7, 1977. The National Park System contains 48 mandatory Class I areas; the Fish and Wildlife Service manages 21 mandatory Class I areas; and the National Forest Service manages 88 Class I areas.

Air quality related values are all those values possessed by an area that may be affected by changes in air quality, and include all those assets of an area whose visibility, significance, or integrity are dependent upon the air environment. These values include: visibility; odor; flora; fauna; geological resources; archeological, historical, and other cultural resources; soils; and water quality resources.

Congress gave the FLM an "affirmative responsibility" to protect AQRVs in mandatory Class I areas. No PSD permit shall be issued if the FLM can convince the permitting authorities that one or more AQRVs will be adversely affected regardless of whether or not the PSD increments would be met. Conversely, if the major emitting facility can convince the permitting authority and the FLM that no damage to AQRVs will occur, the source may be allowed to exceed the Class I PSD increments. However, such sources together with all other sources, cannot exceed the applicable maximum allowable increases [40 CFR 52.21(p)(4)(7)]. Variances to exceed allowable Class I SO increments without the concurrence of the FLM can be requested by a state governor and granted with Presidential concurrence.

There is no specific format for the AQRVs analysis. Appendix G summarizes the requirements applicable to Class I areas under the jurisdiction of the National Park Service. However, determinations are made on a case-by-case basis. In general, when a major source or modification has the potential to impact a Class I area, the air quality review will be more rigorous because the Class I increments and the significant ambient

air quality impact values are more limiting. Also, the modeling procedures must be more precise, the monitoring efforts may be more extensive, and the analysis of additional impact on soils, vegetation, fauna, and visibility will require more specific information. On the other hand, the information on the source required by the state or the EPA will suffice.

If it is anticipated that floodplains or wetlands may be affected by air pollutants, Executive Order 11990 - Protection of Wetlands may apply. The DOE project manager should follow the guidance developed in DOE (1982b).

### 3.5 Public Participation Process

The PSD permitting process must include public participation according to the procedures at 40 CFR Part 124 and 40 CFR 52.21(r) The public participation process can be divided into three phases (Fig. 4):

1) preliminary determination by EPA or the state to issue or deny the PSD permit,

2) public and DOE response to the preliminary determination, and

3) final determination by EPA or the state.

In general, the responsibility for this part of the PSD process rests with EPA or the state. Within 30 days of receipt of the PSD permit application, the regulatory authority must advise DOE of any deficiencies in the application. In addition, if the proposed source would affect a Class I area, the Federal Land Manager (FLM) and the Federal official charged with direct responsibility for management of those lands must be notified (see Sect. 3.4.4).

The Administrator makes a preliminary determination as to whether the construction should be approved with or without conditions, or disapproved. At this time, copies of the following information are made available to the public in the region of the proposed source:

- all materials submitted by DOE;
- the preliminary determination; and
- permit conditions, if any, associated with the preliminary determination.

Public notice is given by advertisement, and DOE and interested officials and agencies are notified by mail.

The public hearing, if held, must be announced 30 days in advance. All comments should be received by the close of a public comment period (usually 10 days after the hearing). No later than 10 days after the close of the public comment period, DOE may submit a written response to the comments. The comments are made available for public inspection. Within one year after receipt of a completed application, the permitting authority shall make a final determination on the application and notify the public, the agencies and officials, and DOE.

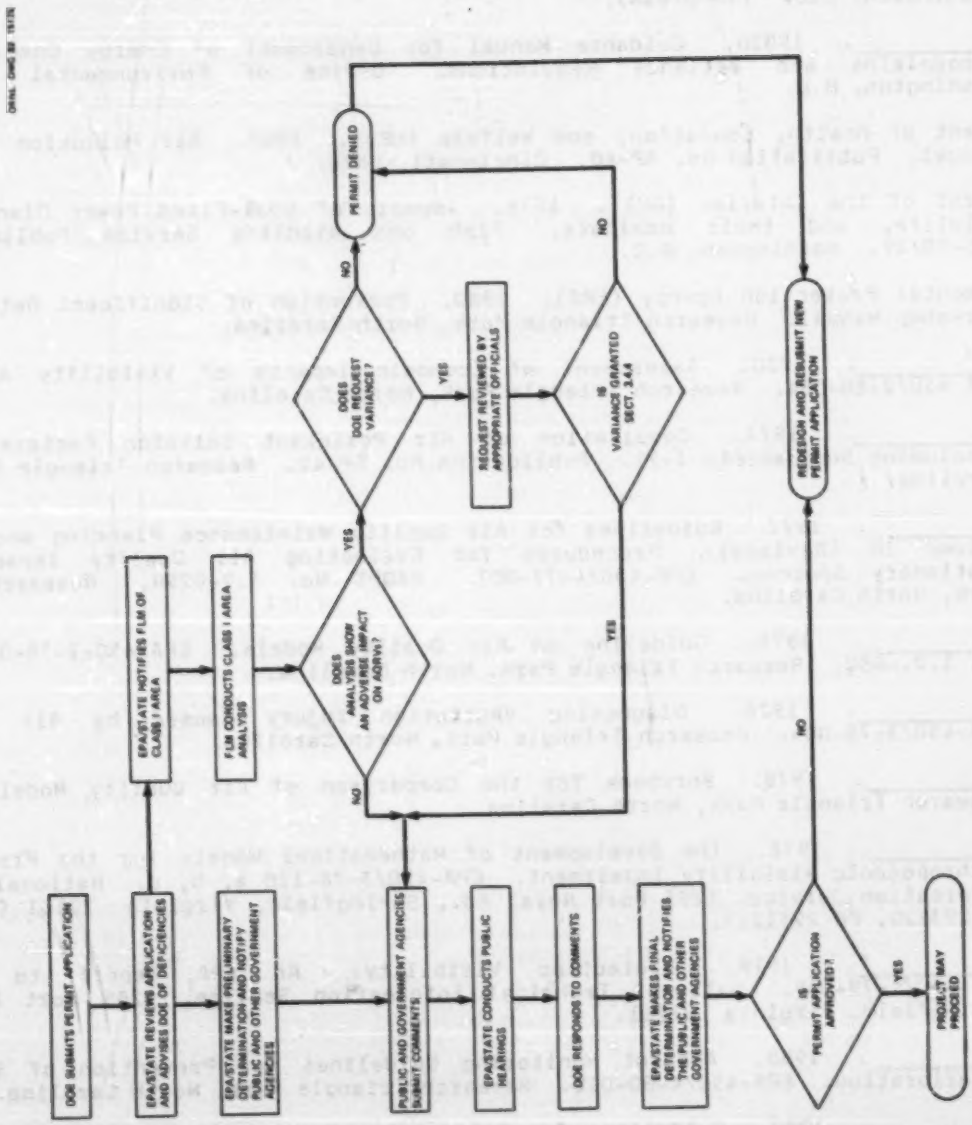
DOE SUBMITS PERMIT APPLICATION
EPA/STATE REVIEWS APPLICATION AND ADVISES DOE OF DEFICIENCIES
EPA/STATE MAKE PRELIMINARY DETERMINATION AND NOTIFY PUBLIC AND OTHER GOVERNMENT AGENCIES
PUBLIC AND GOVERNMENT AGENCIES SUBMIT COMMENTS
EPA/STATE CONDUCTS PUBLIC HEARINGS
DOE RESPONDS TO COMMENTS
EPA/STATE MAKES FINAL DETERMINATION AND NOTIFIES THE PUBLIC AND OTHER GOVERNMENT AGENCIES
IS PERMIT APPLICATION APPROVED?
YES
PROJECT MAY PROCEED
NO
REDESIGN AND RESUBMIT NEW PERMIT APPLICATION
PERMIT DENIED
EPA/STATE NOTIFIES FLM OF CLASS I AREA
FLM CONDUCTS CLASS I AREA ANALYSIS
DOES ANALYSIS SHOW AN ADVERSE IMPACT ON AQRV?
YES
NO
DOES DOE REQUEST VARIANCE?
YES
NO
REQUEST REVIEWED BY APPROPRIATE OFFICIALS
IS VARIANCE GRANTED SECT. 3.4.4
YES
NO

**Figure 4. Public participation flow chart.**

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# Appendix A

## Addresses of EPA Regional Contacts and States Within the Regional Office Jurisdictions

| Region | Regional Office Addresses and Phone Numbers | States Within Jurisdiction |
|---|---|---|
| I | Permit Contact<br>Environmental and Economic Impact Office<br>U.S. Environmental Protection Agency<br>John F. Kennedy Building<br>Boston, Massachusetts 02203<br>Commercial No. (617) 223-4635<br>FTS No. 223-4635 | Connecticut, Maine, Massachusetts, New Hampshire, Rhode Island, and Vermont |
| II | Permit Contact<br>Permits Administration Branch<br>Room 432<br>U.S. Environmental Protection Agency<br>26 Federal Plaza<br>New York, New York 10007<br>Commercial No. (212) 264-9880<br>FTS No. 264-9880 | New Jersey, New York Virgin Islands, and West Virginia |
| III | Permit Contact (3 EN 23)<br>U.S. Environmental Protection Agency<br>6th & Walnut Streets<br>Philadelphia, Pennsylvania 19106<br>Commercial No. (215) 597-8816<br>FTS No. 597-8816 | Delaware, District of Columbia, Maryland, Pennsylvania, Virginia, and West Virginia |
| IV | Permit Contact<br>Permits Section<br>U.S. Environmental Protection Agency<br>345 Courtland Street, N.E.<br>Atlanta, Georgia 30365<br>Commercial No. (404) 881-2017<br>FTS No. 257-2017 | Alabama, Florida, Georgia, Kentucky, Mississippi, North Carolina, South Carolina, and Tennessee |
| V | Permit Contact (5EP)<br>U.S. Environmental Protection Agency<br>230 South Dearborn Street<br>Chicago, Illinois 60604<br>Commercial No. (312) 353-2105<br>FTS No. 353-2105 | Illinois, Indiana, Michigan, Minnesota, Ohio, and Wisconsin |
| VI | Permit Contact (6AEP)<br>U.S. Environmental Protection Agency<br>First International Building<br>1201 Elm Street<br>Dallas, Texas 75270<br>Commercial No. (214) 767-2765<br>FTS No. 729-2765 | Arkansas, Louisiana, New Mexico, Oklahoma, and Texas |
| VII | Permit Contact<br>Permits Branch<br>U.S. Environmental Protection Agency<br>324 East 11th Street<br>Kansas City, Missouri 64106<br>Commercial No. (816) 758-5955<br>FTS No. 758-5955 | Iowa, Kansas, Missouri, and Nebraska |

## Appendix A. (Cont'd)

| Region | Regional Office Addresses and Phone Numbers | States Within Jurisdiction |
|---|---|---|
| VIII | Permit Contact (8E-WE)<br>Suite 103<br>U.S. Environmental Protection Agency<br>1860 Lincoln Street<br>Denver, Colorado 80295<br>Commercial No. (303) 837-4901<br>FTS No. 327-4901 | Colorado, Montana, North Dakota, South Dakota, Utah, and Wyoming |
| IX | Permit Contact<br>Permits Branch (E-4)<br>U.S. Environmental Protection Agency<br>215 Fremont Street<br>San Francisco, California 94105<br>Commercial No. (415) 556-3450<br>FTS No. 556-3450 | Arizona, California, Hawaii, Nevada, Guam, American Samoa, and Trust Territories |
| X | Permit Contact (M/S 521)<br>U.S. Environmental Protection Agency<br>1200 6th Avenue<br>Seattle, Washington 98101<br>Commercial No. (206) 442-7176<br>FTS No. 339-7176 | Alaska, Idaho, Oregon, and Washington |

# Appendix B

## PSD Review Checklists from EPA, Region IV

Source Name _____
Date of Application _____

PSD AND EOP*APPLICABILITY REVIEW

1. Quantify and Characterize the Following Pollutants:

| | EXISTING SOURCE ton/yr | MODIFICATION ton/yr | CLAIMED OFFSETS ton/yr | CREDITABLE OFFSET ton/yr | NET INCREASE ton/yr |
|---|---|---|---|---|---|
| 1. Particulate Matter | | | | | |
| 2. Sulfur Oxides | | | | | |
| 3. Carbon Monoxide | | | | | |
| 4. Nitrogen Oxides | | | | | |
| 5. Ozone (regulate VOC) | | | | | |
| 6. Lead | | | | | |
| 7. Asbestos | | | | | |
| 8. Beryllium | | | | | |
| 9. Mercury | | | | | |
| 10. Vinyl Chloride | | | | | |
| 11. Fluoride | | | | | |
| 12. Sulfuric Acid Mist | | | | | |
| 13. Hydrogen Sulfide ($H_2S$) | | | | | |
| 14. Total Reduced Sulfur (including $H_2S$) | | | | | |
| 15. Reduced Sulfur Compounds (including $H_2S$) | | | | | |

2. Is the Source One of Named Categories? (See Table 8)

Yes - (100 ton/yr for major applies) _____
No - (250 ton/yr for major applies) _____

3. Is the Source Major for Any of the Above Pollutants?

Yes - _____
No - _____

4. Is Existing Source Major? Yes _____ No _____ (if "No", go to line 5)

4a. Is Net Emission Increase Significant (see Table 9) for Any Pollutant(s)?
Yes _____ No _____ (if "No", go to line 8)

5. Is New Source or Modification Major? Yes _____ No _____
(if "No", go to line 8)

5a. Is this Emission Increase Significant for Any Pollutant?
Yes _____ No _____ (if "No", go to line 8)

*Emission Offset Policy

Source Name _____

6. List Each Pollutant Answering "YES" to Questions 4a and 5a, and Determine Attainment Status for Each. (For non-criteria pollutants - attainment is assumed.)

| POLLUTANT | ATTAINMENT/UNCLASSIFIED | NON-ATTAINMENT |
|---|---|---|
| 1. | | |
| 2. | | |
| 3. | | |
| 4. | | |
| 5. | | |

7. Are Any of the Pollutants Listed in Question 6 Non-Attainment?

YES - EOP Review may be Required for these Pollutants.
NO - PSD Reveiw Required for these Pollutants - go to Regulation and Bact Review, and Air Quality Review Sections.

8. Perform Standard New Source Review.

Source Name _____
Date of Application _____

## REGULATION AND BACT REVIEW

1. List All Pollutants Which Were Significant and Located in Attainment/Unclassified Areas, and Perform Evaluation of Emission Data for Source Versus All Applicable Regulations.

| POLLUTANT | APPLICABLE STATE REGS | STATE EMISSION LIMITATION | APPLICABLE FEDERAL REG | FEDERAL EMISSION LIMITATION | PROJECTED COMPLIANCE STATUS |
|---|---|---|---|---|---|
| 1. | | | | | |
| 2. | | | | | |
| 3. | | | | | |
| 4. | | | | | |
| 5. | | | | | |

1a. Are All Proposed Control Methods (including hours of operation) Enforceable?
Yes _____ No _____

2. Determine if BACT is Proposed for All Applicable Pollutant.

| POLLUTANT | TYPE OF CONTROL AND EFFICIENCY PROPOSED | BACT CONTROL EFFICIENCY AND REFERENCE* | DETERMINATION |
|---|---|---|---|
| 1. | | | |
| 2. | | | |
| 3. | | | |
| 4. | | | |
| 5. | | | |

3. Will Each Non-Significant Pollutant be in Compliance with All State and Federal Regulations? Yes _____ No _____

4. Are All Regulations and BACT Determinations Satisfied? Yes _____ No _____
(If "No", preliminary determination to deny mandated.)

*i.e., BACT/LAER Clearing House, industry standard, etc.

2 x 2 MATRIX FOR CONTROL STRATEGY vs. BACT REQUIREMENTS

| CONTROL STRATEGIES | ECONOMIC IMPACTS | | ENVIRONMENTAL IMPACTS | | | ENERGY IMPACTS | | |
|---|---|---|---|---|---|---|---|---|
| | $/TON* | IMPACT ON SENSITIVE ISSUES | MAX. GLC** $ug/m^3$ | IMPACT AREA km | OTHER IMPACTS | Btu/yr | OTHER ISSUES | PERCENT REDUCTION |
| 1 | | | | | | | | |
| 2 | | | | | | | | |
| 3 | | | | | | | | |
| 4 | | | | | | | | |
| 5 | | | | | | | | |

*$/TON = cost per ton of pollutant controlled. These cost figures should incorporate not only initial installation and purchase cost, but also annual operating costs including expected maintenance costs.

**GLC = Ground Level Concentration.

NOTE: This matrix may be combined with matrices developed for other pollutants emitted from same source.

Source Name _____
Date of Application _____

## AIR QUALITY REVIEW

1. Determine Baseline Air Quality for the Area of Source Location.

| | BASELINE | NAAQS |
|---|---|---|
| $SO_2$ - Baseline Date _____ | | |
| Annual Arithmetic Mean | _____ $ug/m^3$ | 80 $ug/m^3$ |
| Maximum 24-hour Concentration | _____ $ug/m^3$ | 365 $ug/m^3$* |
| Maximum 3-hour Concentration | _____ $ug/m^3$ | 1300 $ug/m^3$* |
| TSP - Baseline Date _____ | | |
| Annual Geometric Mean | _____ $ug/m^3$ | 75 $ug/m^3$ |
| Maximum 24-hour Concentration | _____ $ug/m^3$ | 260 $ug/m^3$* |
| Maximum 3-hour Concentration (secondary) | _____ $ug/m^3$ | 150 $ug/m^3$* |

2. Determine Air Quality for the Area of Source Location at Time of Application?

| | PRESENT | NAAQS |
|---|---|---|
| $NO_x$ | _____ $ug/m^3$ | 100 $ug/m^3$ Annual Arithmetic Mean |
| CO | _____ $ug/m^3$ | 10 $ug/m^3$ Maximum 8-hour Concentration*<br>40 $ug/m^3$ Maximum 1-hour Concentration* |
| Pb | _____ $ug/m^3$ | 1.5 $ug/m^3$ Maximum Arithmetic Mean Quarterly Average |
| $O_3$ (VOC) | _____ $ug/m^3$/ppm | 235 $ug/m^3$ (0.12 ppm)* |

3. Determine What Portion of the Available Increments have been Consumed for Each Class Area.

| | AVAILABLE INCREMENT | INCREMENT CONSUMPTION TO DATE | SOURCE CONSUMPTION | REMAINING INCREMENT |
|---|---|---|---|---|
| PM | | | | |
| | | | | |
| $SO_2$ | | | | |
| | | | | |

4. Are Emissions Impacts Below de Minimus for Any Applicable Pollutant (See Table 10) and Exemption Requested? Yes _____ No _____

a) If Yes, refer to administrator (department) for possible exemption of monitoring for affected pollutants.

b) Is exemption granted? Yes ____ No ____ Which Pollutants? _____

*Not to be exceeded more than once/year.

Source Name _____

5. Review Monitoring and Meteorological Data for All Pollutants not Granted Exemption.

   a) Were monitoring sites representative? Yes _____ No _____

   b) Were quality assurance procedures followed? Yes _____ No _____

   c) Are data submitted complete? Yes _____ No _____

6. Review Modeling Presentation.

   a) Was impact area defined for each applicable pollutant? Yes _____ No _____

   b) Were appropriate models chosen for each pollutant? Yes _____ No _____

   c) Was meteorology representative and of sufficient duration? Yes _____ No _____

   d) Were model inputs from other sources correct and appropriate for averaging times modelled? Yes _____ No _____

   e) Were model inputs consistent with rest of application?* Yes _____ No _____

   f) Were fugitive emissions considered in models? Yes _____ No _____

7. If Monitoring and Modeling Tasks were Deemed Acceptable, Complete the Following Table.

| POLLUTANT | POLLUTANT AVERAGING TIME | MAXIMUM INCREMENT CONSUMED | | | ALLOWABLE INCREMENT | TOTAL PROJECTED AIR QUALITY | NAAQS |
|---|---|---|---|---|---|---|---|
| | | BY SOURCE | BY OTHERS | TOTAL | | | |
| | | | | | | | |
| | | | | | | | |
| | | | | | | | |
| | | | | | | | |
| | | | | | | | |
| | | | | | | | |
| | | | | | | | |
| | | | | | | | |
| | | | | | | | |
| | | | | | | | |
| | | | | | | | |

8. Perform/Review Additional Impacts Analysis.

   a) Growth analysis _____

   b) Soils and vegetation impact _____

   c) Visibility impairment analysis _____

9. Does the Source have a Significant** Impact on Any Class 1 Area?
   Yes _____ No _____ (if "No" go to line 10)

   a) Are Class 1 requirements satisfied?

      1) increment consumption Yes _____ No _____
      2) land manager approval Yes _____ No _____

*i.e., stack heights, emission rates, etc.

**A significant impact for Class I areas is 1 ug/$m^3$ on a 24-h basis for any regulated pollutant.

Source Name _____

10. Are Any Non-Attainment Areas Significantly*** Impacted? Yes ____ No ____
(If "Yes", EOP review may apply)

***Significant impact determined as follows:

| POLLUTANT | ANNUAL | 24-HOUR | 8-HOUR | 3-HOUR | 1-HOUR |
|---|---|---|---|---|---|
| $SO_2$ | 1 ug/$m^3$ | 5 ug/$m^3$ | -- | 25 ug/$m^3$ | -- |
| TSP | 1 ug/$m^3$ | 5 ug/$m^3$ | -- | -- | -- |
| $NO_2$ | 1 ug/$m^3$ | -- | -- | -- | -- |
| CO | -- | -- | 0.5 mg/$m^3$ | -- | 2 mg/$m^3$ |

Source Name _____
Date of Application _____

## PUBLIC PARTICIPATION PROCESS

1. Prepare Preliminary Determination Documents.
   a) Itemize necessary permit conditions. _____
   b) Assemble technical support document. _____
   c) Send the preliminary determination to interested officials/public. _____

2. Prepare Newspaper Notice.
   Is the Notice Published in the Area of the Proposed Sources? Yes ____ No ____
   Does the Notice Contain All of the Following Elements?
   a) Description of decision - _____
   b) Availability of pertinent documents - _____
   c) Address of receipt of public comments - _____
   d) Final date for public input - _____

3. Public Hearing.
   a) Is meeting in area of proposed source? Yes ____ No ____
   b) Announce Hearing in paper 30 days in advance. _____
   c) Is court reporter available? Yes ____ No ____
   d) Announce final date for Hearing comments (usually 10 days after hearing. _____
   e) Once comments are received, send to applicant with 10 day deadline for their response. _____

4. Review All Comments and Prepare Response. _____

5. Announce Final Decision and Implement (i.e., issue or deny permit). _____

# APPENDIX C

## STATUS OF STANDARDS OF PERFORMANCE

| Source | Subpart | Affected Facility | Pollutant | Proposal Date | Promulgation Date | Review Date | BID No. |
|---|---|---|---|---|---|---|---|
| Steam Generators (>250 million Btu/hr) | D | Utility and Industrial boilers (coal, oil, and gas) | Particulate<br>$SO_x$<br>$NO_x$ | 8/17/71 | 12/23/71<br>6/14/74 clarification | | EPA-450/3-79-021<br>APTD-0711 |
| | | Wood Residue Amendment | Part., $SO_x$, $NO_x$ | 1/17/79 | 11/22/76<br>(41 FR 51397) | | |
| | | Lignite fired steam generators | $NO_x$ | 12/22/76<br>(41 FR 55792) | 3/7/78<br>(43 FR 9276) | | EPA-450/2-76-030a&b |
| | Da | Utility boilers (solid, liquid, and gaseous fuels) | Part., $SO_2$, $NO_x$ | 9/19/78<br>(43 FR 42154 | 6/11/79<br>(44 FR 33581) | | EPA-450/2-78-005a<br>EPA-450/2-78-006a<br>EPA-450/2-78-007a<br>EPA-450/2-78-007a-1 |
| Municipal Incinerators (>50 tons per day) | E | Incinerators | Particulate | 8/17/71 | 12/23/71 | 11/27/79<br>(44 FR 67939) | APTD-0711<br>EPA-450/3-79-009 |
| Portland Cement Plants | F | Kiln, clinker cooler | Particulate | 8/17/71 | 12/23/71 | 10/22/79<br>(44 FR 60761) | APTD-0711<br>EPA-450/3-79-012 |
| Nitric Acid Plants | G | Process Equipment | $NO_x$ | 8/17/71 | 12/23/71 | 6/19/79 | APTD-0711<br>EPA-450/3-79-013 |
| Sulfuric Acid Plants | H | Process equipment | $SO_x$, acid mist | 8/17/71 | 12/23/71 | 3/15/79<br>(44 FR 15742) | APTD-0711<br>EPA-450/3-79-003 |
| Sulfuric Acid Plants 111(d) | | Process equipment | Acid mist | | 10/18/77 | | EPA-450/2-77-019 |

US EPA/Office of Air Quality Planning & Standards
Emission Standards and Engineering Division
Research Triangle Park, NC 27711

Updated: February 24, 1982
Naomi Durkee
Standards Development Branch

STATUS OF STANDARDS OF PERFORMANCE



| Source | Subpart | Affected Facility | Pollutant | Proposal Date | Promulgation Date | Review Date | BID No. |
|---|---|---|---|---|---|---|---|
| Asphalt Concrete Plants | I | Process equipment | Particulate | 6/11/73 | 3/8/74 | | EPA-450/2-74-003<br>APTD-1352a-c |
| | | | | | | 8/31/79<br>(44 FR 51225) | EPA 450/3-79-014 |
| Petroleum Refineries | J | Fuel gas combustion devices<br>FCCU catalyst regenerators | $SO_2$<br>Particulate, CO | 6/11/73 | 3/8/74 | | EPA-450/2-74-003<br>APTD-1352a-c |
| | | Claus sulfur recovery plants | $SO_2$, reduced sulfur compounds. $H_2S$ | 10/4/76<br>(41 FR 43866) | 3/15/78<br>(43 FR 10866)<br>3/12/79 Amend | | EPA-450/2-76-016a&b |
| | | Definition of small claus sulfur recovery plants | | 3/20/79<br>(44 FR 1720) | 10/25/79<br>(44 FR 61543) | | |
| | | | | | | 10/22/79<br>(44 FR 60759) | EPA-450/3-79-008 |
| | | Clarification of which gaseous fuels are covered | | 3/3/80<br>(45 FR 13991) | 12/1/80<br>(45 FR 79452) | | |
| | | FCCU Catalyst Regenerators | SOx | FY-83 | | | |
| Petroleum Liquid Storage Vessels | K,Ka | Gasoline, crude oil, and distillate storage tanks >40,000 gallons capacity | VOC | 6/11/73<br>5/18/78 Amend. | 3/8/74<br>4/4/80<br>12/18/80 Correction<br>(45 FR 83228) | | APTD-1352a-c<br>EPA-450/2-74-003 |
| | | Equivalency determination | | 4/29/81<br>(46 FR 23984) | (FY-82) | | |
| Secondary Lead Smelters and Refineries | L | Blast and reverberatory furnaces, pot furnaces | Particulate | 6/11/73 | 3/8/74 | | APTD-1352a-c<br>EPA-450/2-74-003 |
| | | | | | | 4/17/80<br>(45 FR 26304) | EPA-450/3-79-015 |
| Secondary Brass and Bronze Ingot Production Plants | M | Reverberatory and electric furnaces and blast furnaces | Particulate | 6/11/73<br>(38 FR 15406) | 3/8/74<br>(39 FR 9308) | | APTD-1352a-c<br>EPA450/2-74-003 |

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## STATUS OF STANDARDS OF PERFORMANCE



| Source | Subpart | Affected Facility | Pollutant | Proposal Date | Promulgation Date | Review Date | BID No. |
|---|---|---|---|---|---|---|---|
| Iron and Steel Mills | H | Basic oxygen process furnaces (BOPF) | Particulate | 6/11/73 (38 FR 15406) | 3/8/74 (39 FR 9318) | | APTD-1352a-c EPA-450/2-74-003 |
| | | Primary emission sources | Opacity Standard | 3/2/77 (39 FR 9308) | 4/13/78 Amend. (43 FR 15602) | | |
| | Na | Revision to be proposed for BOPF's, hot metal & skimming stations | Fugitive Particulate | FY-82 | | 3/21/79 (44 FR 17460) | EPA-450/3-78-116 |
| Sewage Treatment Plants | O | Sludge incinerators | Particulate | 6/11/73 | 3/8/74 11/10/77 Amend. | 11/27/79 (44 FR 67934) | APTD-1352a-c EPA-450/3-79-010 |
| Primary Copper Smelters | P | Roaster, smelting furnace, converter | $SO_x$ | 10/16/74 | 1/15/76 11/1/77 Amend. to G.P. | (FY-83) | EPA-450/2-74-002 |
| | | Dryers | Particulate | | | | |
| Primary Zinc Smelters | Q | Roaster | $SO_x$ | 10/16/74 | 1/15/76 | | EPA-450/2-74-002 |
| | | Sintering machine | Particulate | | | | |
| Primary Lead Smelters | R | Sintering machine, electric smelting furnace, converter | $SO_x$ | 10/16/74 | 1/15/76 | | EPA-450/2-74-002 |
| | | Blast or reverberatory furnace, sintering machien discharge end | Particulate | | | | |
| Primary Aluminum Reduction Plants | S | Pot lines and anode bake plants | Fluorides | 10/23/74 9/19/78 Amend. | 1/26/76 6/30/80 (45 FR 44202) | | EPA-450/2-74-020a-c EPA-450/2-78-025a EPA-450/3-79-026 |
| Primary Aluminum Reduction Plants 111(d) | | Pot lines and anode bake plants | Fluorides | 4/11/79 Draft CTG | 4/17/80 Final CTG | | EPA-450/2-78-049b |

## STATUS OF STANDARDS OF PERFORMANCE



| Source | Subpart | Affected Facility | Pollutant | Proposal Date | Promulgation Date | Review Date | BID No. |
|---|---|---|---|---|---|---|---|
| Phosphate Fertilizer Plants | T | Wet process phosphoric acid | Fluorides | 10/22/74 | 8/6/75 | | EPA-450/2-74-019b |
| | U | Superphosphoric acid | Fluorides | | | | |
| | V | Diammonium phosphate | Fluorides | | | 11/21/80 | EPA-450/3-79-038 |
| | W | Triple superphosphate prod. | Fluorides | | | | |
| | X | Triple superphosphate storage | Fluorides | | | | |
| Phosphate Fertilizer Plants 111(d) | | Wet process phosphoric acid | fluorides | 5/12/76 | 3/1/77 | | |
| | | Superphosphoric acid | Fluorides | | | | |
| | | Diammonium phosphate | Fluorides | | | | |
| | | Triple superphosphate prod. | Fluorides | | | | |
| | | Triple superphosphate storage | Fluorides | | | | |
| Coal Cleaning Plants | Y | Air tables and thermal dryers | Particulate | 10/24/74 | 1/15/76 | | EPA-450/2-74-021a-c |
| | | | | | | 4/14/81 (46 FR 21769) | EPA-450/3-80-022 |
| Ferroalloy Production | Z | Specific furnaces | Particulate & CO | 10/21/74 | 5/4/76 | | EPA-450/2-74-018 |
| | | | | | | 1/26/81 (46 FR 8033) | EPA-450/3-80-041 |
| Iron and Steel Mills | AA | Electric arc furnaces | Particulate | 10/21/74 | 9/23/75 | | EPA-450/2-74-017a&b |
| | | | | | | 4/21/80 (45 FR 26910) | |
| Kraft Pulp Mills | BB | Digesters, lime kiln, recovery furnace, washer, evaporator, strippers, smelt & BLO tanks | Total reduced sulfur (TRS) | 9/24/76 | 2/23/78 | FY-83 | EPA-450/2-76-014a&b |
| | | Recovery furnace, lime kiln, smelt tank | Particulate | 9/24/76 | 2/23/78 8/7/78 Amend. | | |
| Kraft Pulp Mills 111(d) | | Digesters, lime kiln, recovery furnace, washer, evaporator strippers, smelt & BLO tank | Total reduced sulfur (TRS) | 2/23/78 | 5/22/79 | | |
| | | Recovery furnace, lime kiln, smelt tank | Particulate | 2/23/78 | 5/22/79 | | |

ORNL-DWG 82-13411

STATUS OF STANDARDS OF PERFORMANCE



| Source | Subpart | Affected Facility | Pollutant | Proposal Date | Promulgation Date | Review Date | BID No. |
|---|---|---|---|---|---|---|---|
| Glass Manufacturing Plants | CC | Glass melting furnace | Particulates | 6/15/79 (44 FR 34840) | 10/7/80 (45 FR 66742) | | EPA-450/3-79-005a&b |
| Grain Elevators | DD | Truck loading and unloading stations, barge or ship loading and unloading stations, railcar loading & unloading stations, and grain handling operations | Particulates | 1/13/77 | 8/3/78 | | EPA-450/2-77-001a&b |
| Metal Furniture | EE | Each metal furniture surface coating operation | VOC | 11/28/80 (45 FR 79390) | | | EPA-450/3-80-007a |
| Stationary Internal Combustion Engines | FF | Each IC engine | $NO_x$ | 7/23/79 (44 FR 43152) | | | EPA-450/2-78-125a |
| Stationary Gas Turbines | GG | Each gas turbine | $NO_x$, $SO_x$ | 10/3/77 4/15/81 Amend (46 FR 22005) | 9/10/79 1/27/82 (47 FR 3767) | | EPA-450/2-77-017a&b |
| Lime Manufacturing Plants | HH | Rotary kiln, hydrator | Particulates | 5/3/77 | 3/7/78 | | EPA-450/2-77-007b |
| Sodium Carbonate | II | Calciners, dryers, bleachers | Particulates | 10/15/80 (45 FR 68616) | 9/22/81 Withdrawn (46 FR 46813) | | EPA-450/3-80-029a |
| Degreasers (Organic Solvent Cleaners) | JJ | Cold cleaner, vapor degreaser, conveyorized degreaser | VOC, perchloroethylene, trichloroethylene, 1,1,1-trichloroethane, methylene chloride, trichlorotrifluoroethane | 6/11/80 (45 FR 39766) 4/21/81 Applicability date deferred (46 FR 22768) | | | EPA-450/2-78-045a |

STATUS OF STANDARDS OF PERFORMANCE



| Source | Supbart | Affected Facility | Pollutant | Proposal Date | Promulgation Date | Review Date | BID No. |
|---|---|---|---|---|---|---|---|
| Lead Acid Batteries | KK | Lead oxide production grid casting, paste mixing, three-process operation and lead reclamation | Lead | 1/14/80 (45 FR 2790) | | | EPA-450/3-79-028a |
| Metallic Minerals | LL | Metallic mineral processing operations prior to metal reduction | Particulates | FY-82 | | | |
| Automobile and Light-Duty Truck Surface Coating Operations | MM | Prime, guide coat, and top coat operations at assembly plants | VOC emissions | 10/5/79 (Prime coat rev. | 12/24/80 (45 FR 85415) FY-82) | | EPA-450/3-79-030a&b |
| Phosphate Rock Plants | NN | Grinding, drying and calcining facilities | Particulates | 9/21/79 (44 FR 54970) | | | EPA-450/3-79-017 |
| Perchloroethylene Dry Cleaning | OO | Dryer, washers, filters, stills, muck cookers | VOC | 11/25/80 (45 FR 78174) | | | EPA-450/3-79-029a |
| Ammonium Sulfate | PP | Annonium sulfate dryer | Particulates | 2/4/80 (45 FR 7758) | 11/12/80 (45 FR 74846) | | EPA-450/3-79-034a&b |
| Graphic Arts (Rotogravure) | QQ | Each publicagion rotogravure printing press | VOC | 10/28/80 (45 FR 71538) | (FY-82) | | EPA-450/3-80-031a |
| Pressure Sensitive Tapes & Labels Coating | RR | Adhesive coating line, release coating line, precoat coating line | VOC | 12/30/80 (45 FR 86278) | (FY-82) | | EPA-450/3-80-003a |
| Large Appliances | SS | Each surface coating operation | VOC | 12/24/80 (45 FR 85085) | | | EPA-450/3-80-037a |
| Metal Coil Coating | TT | Each prime coating operation, each finish coat operation | VOC | 1/5/81 (46 FR 1102) | (FY-82) | | EPA-450/3-80-035a |

ORNL-DWG 82-13413

STATUS OF STANDARDS OF PERFORMANCE



| Source | Subpart | Affected Facility | Pollutant | Proposal Date | Promulgation Date | Review Date | BID No. |
|---|---|---|---|---|---|---|---|
| Asphalt Roofing | UU | Blowing stills, saturator, asphalt storage tanks, minerals handling, and storage facilities | Particulate | 11/18/80 (45 FR 76427) 5/26/81 Amend. (46 FR 28180) | | | EPA-450/3-80-021a |
| SOCMI Fugitive | VV | Fugitive sources grouped within a process unit. | VOC | 1/5/81 (46 FR 1136) | | | EPA-450/3-80-033a |
| Beverage Can Coatings | WW | Each exterior base coat operation, overvarnish coating operation and inside spray coating operation at 2 and 3 piece can plants | VOC | 11/26/80 (45 FR 76980) | (FY-82) | | EPA-450/3-80-036a |
| Bulk Gasoline Terminals | XX | Gasoline terminals - total of all loading racks | VOC | 12/17/80 (45 FR 83126) | | | EPA-450/3-80-038a |
| Electric Arc Furnaces in a Ferrous Foundry | YY | Electric arc furnaces | Particulates | | | | |
| Industrial Steam Generators | ZZ | Industrial boilers (coal, oil, gas, solid waste, wood and bagasse) | $NO_x$ & Particulates | FY-83 | | | 6/28/79 (44 FR 37632) Advanced Notice |
| VOL Storage Vessels | AAA | Each storage tanks | VOC | FY-82 | | | |
| Rubber Tires | BBB | Undertread cementing, tread and cementing, sidewall cementing, bead cementing, green tire spraying, common affected facility | VOC | FY-82 | | | |

ORNL-DWG 82-13414

STATUS OF STANDARDS OF PERFORMANCE



| Source | Subpart | Affected Facility | Pollutant | Proposal Date | Promulgation Date | Review Date | BID No. |
|---|---|---|---|---|---|---|---|
| Not used | CCC | | | | | | |
| Gypsum Manufacturing Plants | DDD | Ore dryers, calciners, board end sawing operations, conveying operations, and storage systems | Particulate | FY-82 | | | |
| By-Product Coke Oven Battery Stacks | EEE | Coke oven battery | Particulate | No schedule | | | |
| Flexible Vinyl Coating and Printing Operat. | FFF | Rotogravure printing and coating of flexible vinyl products | VOC | FY-82 | | | EPA-450/3-81-016a |
| Petroleum Refineries | GGG | (1) Each compressor<br>(2) fugitive emission sources grouped within a process unit | VOC | FY-82 | | | |
| Synthetic Fiber Production Facilities | HH | Solven-spun synthetic fiber manufacturing facilities | VOC | FY-82 | | | |
| SOCMI - Air Oxidation | III | Manufacture of synthetic organic chemicals via air oxidation processes | VOC | FY-82 | | | |
| Petroleum Dry Cleaning | JJJ | Drycleaning equipment in which petroleum solvent is used | VOC | FY-82 | | | |
| Crude Oil & Natural Gas Production | KKK | Crude oil & natural gas production facilities Fugitive emission sources | VOC | FY-82 | | | |
| Crude Oil & Natural Gas Production | LLL | Crude oil and natural gas production | $SO_2$ | FY-82 | | | |

ORNL-DWG 82-13415

STATUS OF STANDARDS OF PERFORMANCE



| Source | Subpart | Affected Facility | Pollutant | Proposal Date | Promulgation Date | Review Date | BID No. |
|---|---|---|---|---|---|---|---|
| Coke Oven Wet Quenching | [illegible] | Conventional wet quenching facilities | Particulate | FY-82 | | | |
| Distillation Operations | | Each distillation column in a petroleum refinery & synthetic organic chemical plant used in making one of 220 chemicals | VOC | FY-83 | | | |

ORNL-DWG 82-13416

## STATUS OF STANDARDS OF PERFORMANCE
### Hazardous Pollutants



| Source | Subpart | Affected Facility | Pollutant | Proposal Date | Promulgation Date | Review Date | BID No. |
|---|---|---|---|---|---|---|---|
| Asbestos | B | Asbestos mills; roadway surfacing (asbestos tailings); demolition; spraying, fabricating, waste disposal and insulating. | Asbestos | 12/7/71 | 4/6/73 (38 FR 8826) | (FY-82) | APTD-1503 |
| | | | | 10/25/74 | 10/14/75<br>5/3/74 Revision | | EPA-450/2-74-009a |
| | | Manufacture of shotgun shells asphalt concrete, products containing asbestos (textiles, cement, fireproofing and insulating materials, friction products, paper, millboard, felt, floor tile, paints, chlorinalkali coatings, caulks, adhesives and sealants) | | | 3/2/77 Amend.<br>6/19/78 Amend. | | EPA-450/2-77-030 |
| Beryllium | C | Extraction plants, ceramic plants, foundries, incinerators, propellant plants, machining operations | Beryllium | 12/7/71 | 4/6/73 (38 FR 8836) | | APTD-1503 |
| Beryllium, Rocket Motor Firing | D | Rocket motor firing | Beryllium | 12/7/71 | 4/6/73 (38 FR 8836) | | APTD-1503 |
| Mercury | E | Ore processing, chlor-alkali manufacturing | Mercury | 12/7/71 | 4/6/73 (38 FR 8836) | | APTD-1503 |
| | | | | 10/25/74 | 10/14/75 | | EPA-450/2-74-009a |
| Vinyl Chloride | F | Ethylene dichloride manufacture via $O_2$/HCl, vinyl chloride manufacture, polyvinyl chloride manufacture | Vinyl Chloride | 12/24/75<br>6/2/77 Amend. | 10/21/76 | | EPA-450/2-75-009a<br>EPA-450/2-75-009b |

STATUS OF STANDARDS OF PERFORMANCE

Hazardous Pollutants



| Source | Subpart | Affected Facility | Pollutant | Proposal Date | Promulgation Date | Review Date | BID No. |
|---|---|---|---|---|---|---|---|
| Coke Oven Emissions: Charging Topside Leaks Door Leaks | G | Wet-coal charged coke oven batteries | Coke oven emissions | FY-82 | | | |
| Maleic Anhydride | H | Maleic anhydride production units that process >550 tons of maleic acid, maleic anhydride or both, per year | Benzene | 4/14/80 (45 FR 26660) | | | EPA-450/3-80-001a |
| Ethylbenzene/ Styrene | I | Alkylation reactor section, EB hydroperoxidation reactor, hydrogen separation system | Benzene | 12/18/80 (45 FR 83448) | | | EPA-450/3-79-035a |
| Benzene Fugitive | J | Individual fugitive emission sources | Benzene | 1/5/81 (46 FR 1165) | | | F/A-450/3-80-032a |
| Benzene Storage Vessels | K | Each storage tank | Benzene | 12/19/80 (45 FR 83952) | | | EPA-450/3-80-034a |
| Coke Oven By-Product Recovery Plants | L | Process equipment, storage facilities , fugitive emission sources and sumps | Benzene | | | | |
| Inorganic Arsenic | | Roasters, smelting furnaces, and converters, stack and fugitive emissions | Inorganic arsenic | | | | |
| Primary Copper Smelters . | | | | | | | |
| Acrylonitrile | | Undetermined | | | | | FY-82 Listing Scheduled |
| General Provisions Amendment | | | | | | | FY-82 Proposal |

# Appendix D

## Prioritized Major Source Categories for Which New Source Performance Standards Are Likely to be Developed

1. Synthetic Organic Chemical Mfg.
   (a) Unit processes
   (b) Storage and handling equipment
   (c) Fugitive emission sources
   (d) Secondary sources
2. Industrial Surface Coating: Cans
3. Petroleum Refineries: Fugitive Sources
4. Industrial Surface Coating: Paper
5. Dry Cleaning
   (a) Perchloroethylene
   (b) Petroleum solvent
6. Graphic Arts
7. Polymers and Resins: Acrylic Resins
8. Stationary Internal Combustion Engines
9. Industrial Surface Coating: Fabric
10. Fossil-Fuel-Fired Steam Generators: Industrial Boilers
11. Non-Metallic Mineral Processing
12. Metallic Mineral Processing
13. Phosphate Rock Preparation
14. Foundaries: Steel and Gray Iron
15. Polymers and Resins: Polyethylene
16. Charcoal Production
17. Synthetic Rubber
    (a) Tire manufacture
    (b) SBR production
18. Vegetable Oil
19. Industrial Surface Coating: Metal Coil
20. Petroleum Transportation and Marketing
21. By-Product Coke Ovens
22. Synthetic Fibers
23. Plywood Manufacture
24. Industrial Surface Coating: Automobiles
25. Industrial Surface Coating: Large Applicances
26. Crude Oil and Natural Gas Production
27. Secondary Aluminum
28. Lightweight Aggregate Industry: Clay, Shale, and Slate
29. Glass
30. Gypsum
31. Sodium Carbonate
32. Polymers and Resins: Phenolic
33. Polymers and Resins: Urea - Melamine
34. Polymers and Resins: Polystyrene
35. Polymers and Resins: ABS-SAN Resins
36. Fiberglass
37. Polymers and Resins: Polypropylene
38. Textile Processing
39. Asphalt Roofing Plants
40. Brick and Related Clay Products
41. Ammonium Nitrate Fertilizer
42. Polymers and Resins: Polyester Resins
43. Ammonium Sulfate
44. Starch
45. Perlite
46. Uranium Refining
47. Urea (for fertilizer and polymers)

### Other Source Categories

Lead acid battery manufacture*
Organic solvent cleaning*
Industrial surface coating: metal furniture*
Stationary gas turbines**

*Minor source category, but included on list since an NSPS is being developed for that source category.

**Not prioritized, since an NSPS for this major source category has already been proposed.

SOURCE: 47 FR 950 (January 8, 1982)

# Appendix E *

**Practical Problems in Complying with the Clean Air Act**
**Executive Enterprises Environmental Regulation Course**

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The "net emissions increase" concept, as applied to modifications, is part of the EPA's evolving "bubble policy." There are two fundamental applications of the "bubble policy" under the EPA's present Clean Air Act regulatory program. The first concerns existing emissions sources which are required to reduce current emission levels; the second concerns new source modifications/expansions which are allowed to calculate annual emission levels on a net basis. This "netting" process involves three basic steps:

1. Calculate the increased emissions from the proposed modification project itself;

2. add to this value any "contemporaneous" and "creditable" emission increases which have or will occur at the source; and subtract any contemporaneous/creditable emission decreases which have occurred or will occur at the source;

3. compare the resulting net emission level to EPA's "significance levels" shown in Table 9. If one of the significance levels is exceeded, a "major modification" has occurred.

## DEFINING THE PROJECT - NEW SOURCE OR MODIFICATION?

A. Given the significant differences in the definitions of a "major stationary source" and "major modification", a vital preliminary step in the applicability analysis is to properly classify a proposed project as either a new stationary source or a modification.

B. Where a new "grass roots" facility is involved, it is generally clear that a new stationary source is being proposed. Complications can arise, however, when a company proposes to expand an existing industrial complex.

C. These complications relate to the terms "stationary source" and "modification". The regulations define a "stationary source" as all of the pollutant-emitting activities which (1) are located on one or more contiguous or adjacent properties, (2) are under the control of the same person (or persons under common control), and (3) belong to the same industrial grouping. Pollutant-emitting activities under this definition are considered as part of the same "industrial grouping" if they have the same first two-digit SIC[1] code.

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[1]Standard Industrial Classification Manual, 1972, as amended by the 1977 Supplement (U.S. Government Printing Office, Stock Nos. 4101-0066 and 003-005-00176-0, respectively).

D. The rules define a "modification" as a physical or operational change at an existing "stationary source". Several types of projects, however, do not qualify as "modifications" and are, hence, exempt from review, regardless of any increase in emissions which they cause. Certain voluntary fuel switches and increases in operating rates are important examples.

## DEFINING THE SOURCE TO BE MODIFIED

1. A modification project cannot qualify as a "major modification" unless it occurs at a stationary source which is already "major" for at least one pollutant. The only exception to this rule is a modification which would be a "major stationary source" by itself.

2. The essence of the source definition phase of the applicability analysis is to properly define the boundaries and potential emissions of the stationary source that is to be modified. Defining the source boundaries is not always as simple as it might appear. Many industrial complexes are, in fact, composed of more than one stationary source.

3. Once the modified stationary source has been defined, the next step is to define its "potential to emit" to determine if it is "major" for at least one pollutant.

4. For large industrial sources such as refineries, petrochemical complexes and steel mills, no analysis is really required to conclude that the existing source is "major". For smaller plants, however, the question can be critical. Where this is the case, companies soon realize that the "potential" emissions from their existing operations are usually much higher than the emissions levels they have actually experienced.

5. In cases where the calculated potential emissions of an existing source are far greater than those which are ever likely to occur, such that the source is deemed to be "major", the affected company may want to consider imposing certain enforceable limitations on its existing operations. This can allow the source to be considered as "minor", thereby enabling a proposed modification project to escape review.

## INCREASED EMISSIONS FROM THE MODIFICATION ITSELF

1. Assuming that the existing source (i.e., the one to be modified) is in fact a major stationary source, the next step in the applicability analysis is to determine the emissions increase which will result from the modification project itself. In many cases, the most difficult aspect of this determination is to properly define the "modification". A boiler replacement project provides an example. Does the modification include only the new boiler, in which case only the increased emissions will be part of the modification; or should the emission decreases from the retired boiler be taken into account in defining the modification?

2. This determination can be important because of a recently adopted EPA policy under which modification projects will be exempted from review if the modification itself would not emit more than a "significant" amount of any pollutant (see Table 9). Prior to this policy, even a very minor emissions increase from a physical or operational change at a source (e.g., 1 tpy of $SO_2$) could result in a "major modification".

3. Once the modification has been properly defined, it is necessary to quantify any increase in emissions which it will cause. Under the rules, such an increase is measured in terms of the "actual emissions" from the modification. In the common case where the modification involves the construction or installation of new equipment, the rules are clear that the actual emissions of the proposed unit are equal to its "potential to emit". However, where the modification involves the revamping or conversion of existing equipment, quantifying the increase can be far more difficult.

4. In these cases, it is first necessary to establish the level of actual emissions from the unit prior to the modification. This level must then be compared to the level of actual emissions expected after the modification. In establishing the unit's premodification level of actual emissions, the regulations establish a general

rule that they are equal to the average rate, in tons per year, at which the unit actually emitted the pollutant during a two-year period which precludes the proposed modification and which is representative of normal source operations.

5. In cases where this two-year period is not representative of normal source operation, the agency must use a different time period that is more representative of the unit's normal operation. Regardless of the period selected, however, actual emissions must be calculated using the unit's actual operating hours, production rates, and material useage during the selected time period.

6. In most cases, a company will want to establish the unit's premodification actual emissions at as high a level as possible. In this way, the resulting "increase" due to the modification will be lower.

7. In many cases, a unit's emission level over the two years preceding its modification are lower than at other periods in the unit's operating history. However, there are many reasons why this two-year period preceding the modification may not be representative of normal source operation. Companies must carefully consider this fact when performing applicability analyses for revamp and replacement projects.

## CONTEMPORANEOUS EMISSION CHANGES AT THE SOURCE

The next step in the applicability analysis is to identify and quantify other increases and decreases in actual emission at the source which are (1) contemporaneous with the modification; and (2) creditable. At this point in the analysis, we have already determined that the emissions increase associated with the modification is "significant". Now we are focusing only on emission changes which have occurred or are planned to occur elsewhere within the "stationary source" (i.e., the plant).

1. Contemporaneity. The first issue we face here is the question of contemporaneity. Under the rules, a company must first establish a specific date on which it will "commence construction" on the modification. It must then identify all increases and decreases in actual emissions which have occurred at the source over the five years preceding this fixed date. The company must then establish a specific date on which the emissions increase from the modification will occur. Any planned emission increases or decreases which will occur after this date will not be "contemporaneous" with the modification. Those which will occur prior to this date will be contemporaneous, provided they occur after the five year "look back" period described above.

2. Creditability. One of the more complicated aspects of the netting rules concerns the "creditability" of emission increases and decreases which otherwise meet the contemporaneity test. Put simply, a contemporaneous increase or decrease in actual emission must be factored into the net emissions calculation if it is creditable. Two types of contemporaneous emission changes (increases or decreases) are not considered creditable.

The first type of non-creditable change in emissions is one which has already been analyzed for its air quality impact as part of an earlier new source review.

The second type of non-creditable emissions change concerns certain changes in $SO_2$ or particulate matter emissions which occur before the applicable PSD "baseline date". The "baseline date" for an area is the earliest date after August 7, 1977 on which a completed PSD application is filed with the permit agency. Only certain emission changes which occur prior to this date consume (or, in the case of emission decreases, expand) the available PSD increment.

Specifically, $SO_2$ and particulate emissions from major new sources and major modifications that have commenced construction since January 6, 1975 consume the PSD increment, irrespective of the applicable baseline date. Conversely, construction related emission reductions which occur at a major stationary source after January 6, 1975 will expand the available PSD increment, even if they occur prior to the baseline date. Each of the above-mentioned emission changes are considered creditable for netting purposes. Other pre-baseline date changes in $SO_2$ or particulate emissions are not creditable - even if they are contemporaneous with the particular modification in question.

3. Extent of Creditability. Once the contemporaneous/creditable emission changes at a source have been identified, it is then necessary to quantify them. In many cases, this is the most important part of the net emissions calculation. In analyzing the rules governing this quantification process, it is best to distinguish between increases and decreases since the respective rules are quite different.

With respect to emission increases, the rules are relatively straightforward. An increase in actual emissions due to a contemporaneous modification project is computed in the same way that one calculates the emissions increase from the modification in question. That is, the increase is creditable to the extent that the new level of actual emissions at the emissions unit in question exceeds the old level.

The provisions for quantifying contemporaneous emission changes decreases are more complex. Three separate rules must be observed. The first rule concerns the baseline for computing offset credit. The offset credit which can be obtained from shutting down or cleaning up an existing unit cannot exceed that unit's actual emissions level - even if the unit's allowable emissions" are much higher than its actual emissions. Also, a company cannot obtain offset credit by bringing a unit into compliance with its "allowable emissions" level.

The second basic rule for determining the extent of creditability for emission decreases is that they must be "federally enforceable" as of the moment that actual construction begins on the modification in question. Furthermore, following initiation of construction on the modification, the plant is required to maintain the reduced emissions levels which it used for offset purposes. Failure to do so can subject the owner or operator of the source to enforcement action by the state (for violating the SIP or the state permit) and/or EPA (for construction of a major modification without an appropriate permit).

The third and final rule governing the extent of offset creditability is that a decrease is creditable only to the extent that it has the same "health and welfare significance" as the increase in question. By this provision, EPA has attempted to prevent an increase in emissions with considerable health and welfare significance from escaping review merely because of a contemporaneous decrease in less harmful emissions.

## COMPUTING THE NET EMISSION CHANGE

At this point in the applicability analysis, arithmetic is all that remains to be done to determine whether a significant net emissions increase will result. Table E-1 provides an example of how the overall applicability analysis can be synthesized into a single table. The numbers in this table have been designed to illustrate several of the applicability rules discussed earlier. The modification project used in this hypothetical illustration involves the alteration of a refinery steam generation unit made up of three process heaters. Two of the process heaters are to be enlarged. The third heater is to be replaced with an entirely new heater. A new fuel oil storage system is also being constructed to serve the modified unit. Commencement of construction on the modification is scheduled for February of 1982.

Contemporaneous emission increases at the source include:

1. A new boiler which commenced construction in July of 1977.
2. A process unit alteration project in 1978 which increased the unit's particulate emissions.

Contemporaneous emission decreases at the source include:

1. A combustion unit which was switched from oil to natural gas in 1979.
2. A process unit that will be retired in late 1982, prior to startup of the modified steam generation unit.

The source is located in an area which is designated "attainment" for all poilutants except ozone. Hence, volatile organic compounds (VOC) are a "nonattainment" pollutant. The PSD baseline date in the area is November 15, 1977.

TABLE E-1.

NET EMISSIONS DETERMINATION
--An Illustration--

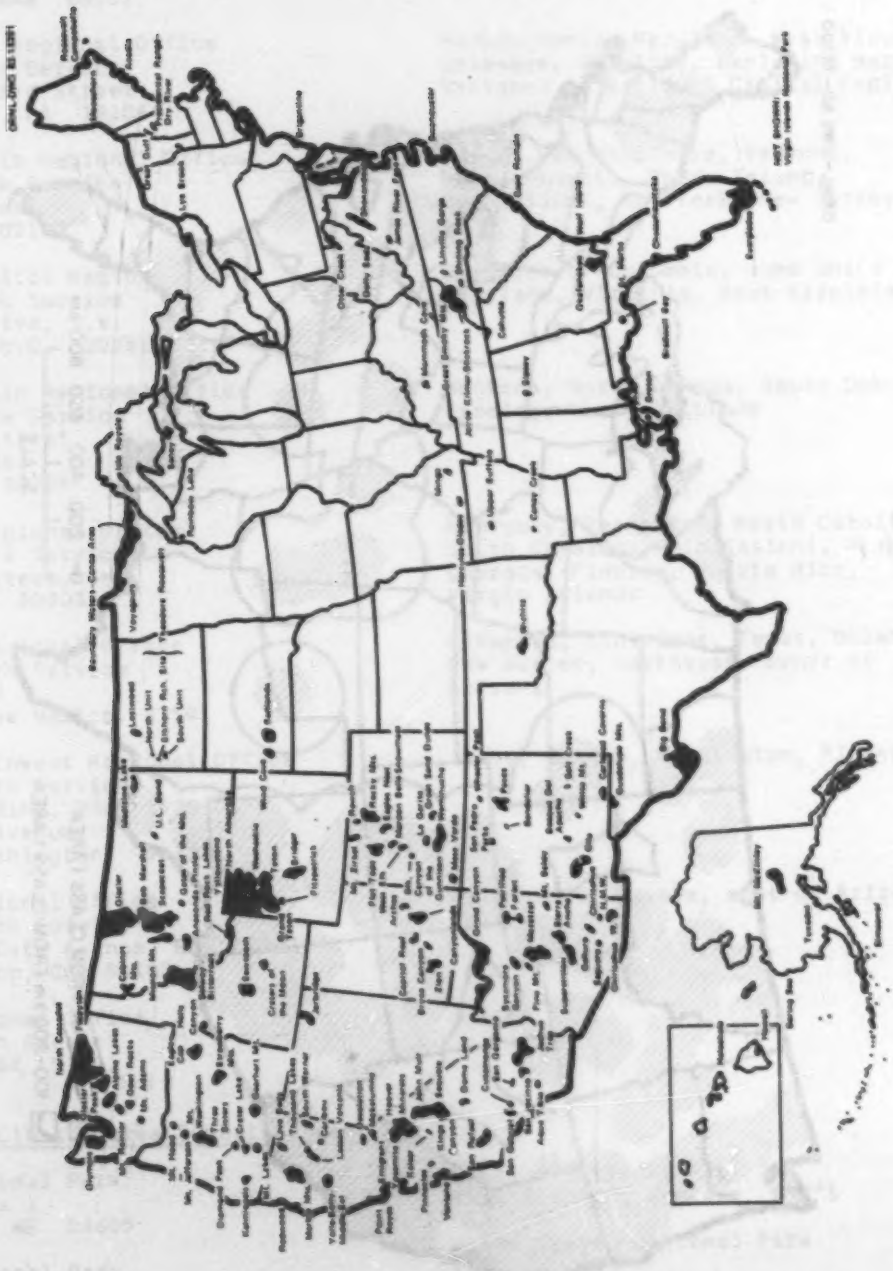
| | Pollutants emitted (tons/year) | | | | |
|---|---|---|---|---|---|
| | $SO_2$ | $NO_x$ | Particulate Matter | CO | Volatile Organic Compounds (VOC) |
| Potential To Emit Of The Source (Plant) That Is To Be Modified Increased Actual Emissions From The Modification Itself | 500 | 500 | 90 | 5000 | 500 |
| The Two Enlarged Heaters | | | | | |
| Actual Emissions Before Enlargement | 140 | 90 | 25 | 60 | 5 |
| Actual Emissions After Enlargement | 180 | 100 | 30 | 75 | 6 |
| Net Increase | 40 | 10 | 5 | 15 | 1 |
| The New Heater and Storage Tank (Potential To Emit) | 90 | 30 | 40 | 20 | 43 |
| The Retired Heater | | | | | |
| Actual Emissions Before Retirement | 40 | 25 | 15 | 20 | 3 |
| Actual Emissions After Retirement | 0 | 0 | 0 | 0 | 0 |
| Net Decrease | 40 | 25 | 15 | 20 | 3 |
| Total Net Increase In Actual Emissions From Modification | 90 | 15 | 30 | 15 | 41 |
| Contemporaneous Increases In Actual Emissions | | | | | |
| The 1977 Boiler | 150 | 60 | 45 | 35 | 10 |
| The 1978 Process Unit Alteration | | | | | |
| Actual Emissions Before Alteration | 25 | 30 | 20 | 2000 | 75 |
| Actual Emissions After Alteration | 50 | 35 | 25 | 3000 | 125 |
| Net Increase | 25 | 5 | 5 | 1000 | 50 |
| Total Contemporaneous Decreases In Actual Emissions | 175 | 65 | 5 | 1035 | 60 |
| Contemporaneous Increasess In Actual Emissions | | | | | |
| The 1979 Fuel Switch To Natural Gas | | | | | |
| Actual Emissions Before The Switch | 85 | 70 | 15 | 30 | 5 |
| Actual Emissions After The Switch | 5 | 60 | 0 | 20 | 0 |
| Net Increase | 80 | 10 | 15 | 10 | 5 |
| The Proposed Shutdown In 1982 | | | | | |
| Current Actual Emissions | 165 | 10 | 30 | 85 | 10 |
| Proposed Emissions After Shutdown | 0 | 0 | 0 | 0 | 0 |
| Net Decrease | 165 | 10 | 30 | 85 | 10 |
| Total Contemporaneous Emission Decreases | 245 | 20 | 45 | 95 | 15 |
| Summary of Net Emissions Changes | | | | | |
| Increased Actual Emissions From The Modification | 90 | 15 [1] | 30 [2] | 15 [1] | 41 [2] |
| Contemporaneous Emission Increases | 175 | 65 | 50 | 1035 | 60 |
| Contemporaneous Emission Decreases | 245 | 20 | 45 | 95 | 15 |
| Net Increase (Decrease) In Actual Emissions | 20 [1] | 60 | 35 [2] | 95 | 86 |
| Applicable Significance Level (see Table 1) | 40 | 40 | 25 | 100 | 40 |

[1]Not significant; no review.

[2]Significant; review.

# Appendix F

## Reference Materials on Class I Areas



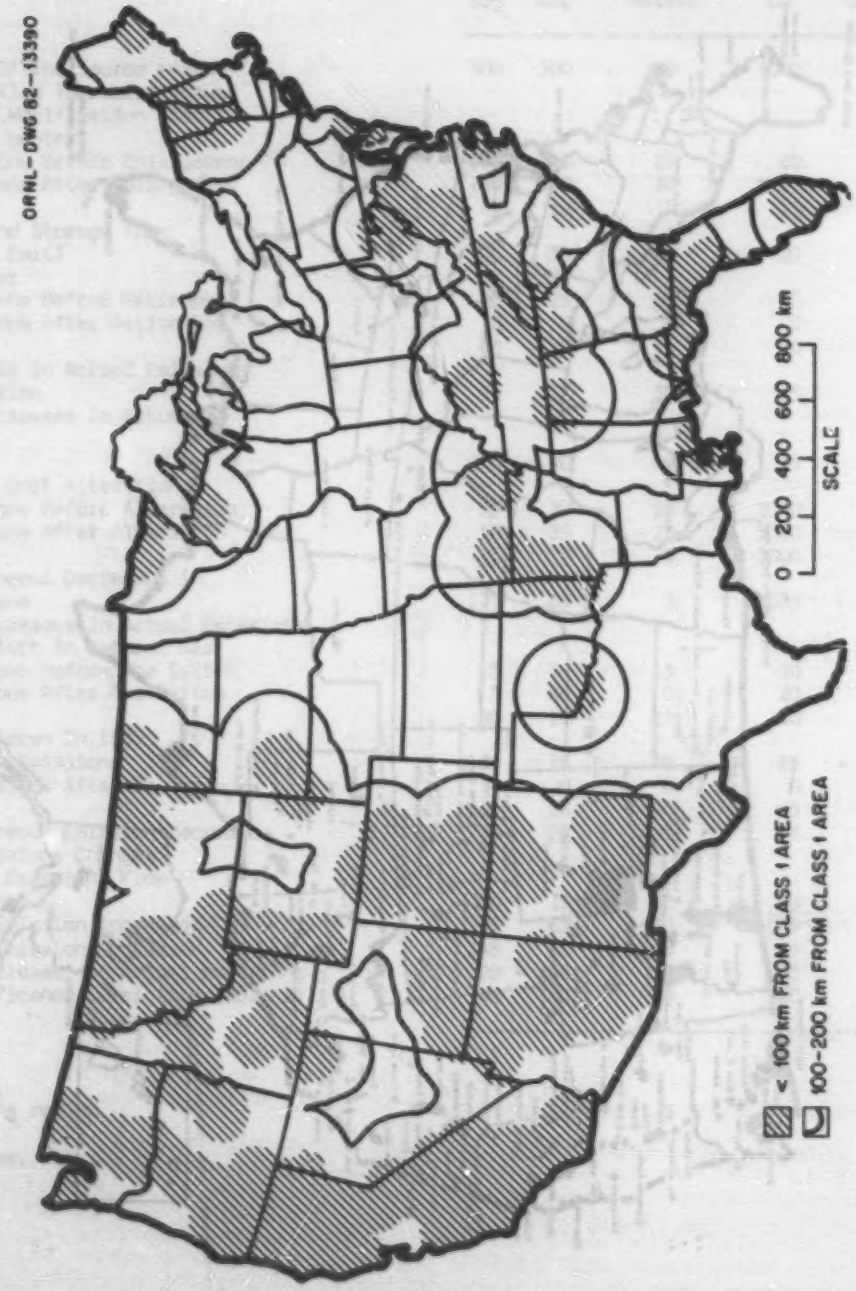

ORNL-DWG 62-13390
0 200 400 600 800 km
SCALE
< 100 km FROM CLASS I AREA
100-200 km FROM CLASS I AREA

Table F.1. NPS Permit Notification List

| Notify Regional Director at: | Jurisdiction |
|---|---|
| Midwest Regional Office<br>National Park Service<br>1709 Jackson Street<br>Omaha, Nebraska 68102 | Ohio, Indiana, Michigan, Wisconsin, Illinois, Minnesota, Iowa, Missouri, Nebraska, Kansas |
| Mid-Atlantic Regional Office<br>National Park Service<br>143 South Third Street<br>Philadelphia, PA 19106 | Pennsylvania, Maryland, West Virginia, Delaware, Virginia, excluding parks assigned to National Capital Region |
| North Atlantic Regional Office<br>National Park Service<br>15 State Street<br>Boston, MA 02109 | Maine, New Hampshire, Vermont, Massachusetts, Rhode Island, Connecticut, New York, New Jersey |
| National Capitol Region<br>National Park Service<br>1100 Ohio Drive, S.W.<br>Washington, D.C. 20242 | District of Columbia, some units in Maryland, Virginia, West Virginia |
| Rocky Mountain Regional Office<br>National Park Service<br>655 Parfet Street<br>P.O. Box 25287<br>Denver, CO 80225 | Montana, North Dakota, South Dakota, Wyoming, Utah, Colorado |
| Southeast Regional Office<br>National Park Service<br>75 Spring Street, SW<br>Atlanta, GA 30303 | Kentucky, Tennessee, North Carolina, South Carolina, Mississippi, Alabama, Georgia, Florida, Puerto Rico, Virgin Islands |
| Southwest Regional Office<br>National Park Service<br>P.O. Box 728<br>Santa Fe, New Mexico 87501 | Arkansas, Louisiana, Texas, Oklahoma, New Mexico, northeast corner of Arizona |
| Pacific Northwest Regional Office<br>National Park Service<br>Westin Building, Room 1920<br>2001 Sixth Avenue<br>Seattle, Washington, 98121 | Idaho, Oregon, Washington, Alaska |
| Western Regional Office<br>National Park Service<br>450 Golden Gate Avenue, Box 26063<br>San Francisco, CA 94102 | California, Nevada, most of Arizona, Hawaii |
| Alaska Regional Office<br>540 West 5th Avenue<br>Anchorage, AK 99501 | Alaska |
| **Notify NPS Class I area Superintendent at:** | |
| Acadia National Park<br>Route 1, Box 1<br>Bar Harbor, ME 04609 | Glacier National Park<br>West Glacier, Montana 59936 |
| Arches National Park<br>446 South Main Street<br>Moab, Utah 84532 | Grand Canyon National Park<br>P.O. Box 129<br>Grand Canyon, Arizona 86023 |

Table F.1. Cont'd

Badlands National Monument
P.O. Box 6
Interior, South Dakota 57750

Bandelier National Monument
Los Alamos, NM 87544

Big Bend National Park
Big Bend National Park, TX 79834

Black Canyon of the Gunnison NM
P.O. Box 1648
Montrose, CO 81401

Bryce Canyon National Park
Bryce Canyon, Utah 84717

Canyonlands National Park
446 South Main Street
Moab, UT 84532

Carlsbad Caverns National Park
3225 National Parks Highway
Carlsbad, NM 88220

Capitol Reef National Park
Torry, Utah 84775

Chiricahua National Monument
and Wilderness Area
Dos Cabesas Star Route
Willcox, AZ 85643

Crater Lake National Park
P.O. Box 7
Crater Lake, Oregon

Crater of the Moon National Monument
P.O. Box 29
Arco, Idaho 83213

Everglades National Park
P.O. Box 279
Homestead, Florida 33030

Mount McKinley National Park
P.O. Box 9
McKinley Park, Alaska 99755

Mount Rainier National Park
Tahoma Woods, Star Route
Ashfor, WA 98304

North Cascades National Park
800 State Street
Sedro Woolley, WA 98284

Sequoia National Park
Three Rivers, CA 93271

Olympic National Park
600 East Park Avenue
Port Angeles, WA 98302

Grand Teton National Park
P.O. Box 67
Moose, Wyoming 83012

Great Smoky Mountains National Park
Gatlinburg, TN 37738

Great Sand Dunes National Park
P.O. Box 60
Alamosa, CO 81101

Guadalupe Mountains National Park
3225 National Parks Highway
Carlsbad, Texas 88220

Haleakala National Park
P.O. Box 537
Makawao, Hawaii 96768

Hawaii Volcanoes National Park
Hawaii National Park, Hawaii 96768

Isle Royale National Park
87 North Ripley Street
Houghton, MI 49931

Joshua Tree National Monument
74485 Palm Vista Drive
Twentynine Palms, CA 92277

Kings Canyon National Park
Three Rivers, CA 93271

Lassen Volcanic National Park
Mineral, CA 96063

Lava Beds National Monument
P.O. Box 867
Tulelake, CA 96134

Mammoth Cave National Park
Mammoth Cave, KY 42259

Mesa Verde National Park
Mesa Verde National Park, CO 81330

Virgin Islands National Park
P.O. Box 806
Charlotte Amalie
St. Thomas, VI 00801

Voyageurs National Park
P.O. Drawer 50
International Falls, MN 56649

Wind Cave National Park
Hot Springs, SD 57747

Yellowstone National Park
P.O. Box 168
Yellowstone National Park, WY 82190

Yosemite National Park
P.O. Box 577
Yosemite National Park, CA 95389

Table F.1. Cont'd

Petrified Forest National Park
Petrified Forest National Park,
AZ 86028

Pinnacles National Monument
Paicines, CA 95043

Point Reyes National Seashore
Point Reyes, CA 94956

Redwood National Park
Drawer N. Department of the Interior
Crescent City, CA 95531

Rocky Mountain National Park
Estes Park, CO 80517

Saguaro National Monument
P.O. Box 17210
Tucson, AZ 85731

Shenandoah National Park
Route 4, Box 292
Luray, Virginia 22835

Theodore Roosevelt National Memorial Park
Medora, ND 58645

Zion National Park
Springdale, UT 84767

IN ALL CASES NOTIFY:

Chief, Air Quality Division

National Park Service (492)
18th & C Streets, NW
Washington, D.C. 20240

Chief, Permit Review Unit
National Park Service - AIR
P.O. Box 25287
Denver, CO 80225

FWS Permit Notification List

| Notify Regional Director at: | Jurisdiction |
|---|---|
| U.S. Fish and Wildlife Service<br>Lloyd 500 Building, Suite 1692<br>500 NE Multnomah Street<br>Portland, Oregon 97232 | Washington, Oregon, Idaho, Nevada, Hawaii, California |
| U.S. Fish and Wildlife Service<br>P.O. Box 1306<br>Albuquerque, New Mexico | Arizona, New Mexico, Oklahoma, Texas |
| U.S. Fish and Wildlife Service<br>Federal Building, Fort Snelling<br>Twin Cities, Minnesota 55111 | Minnesota, Wisconsin, Illinois, Indiana, Ohio |
| U.S. Fish and Wildlife Service<br>Richard B. Russell Federal Building<br>75 Spring Street, SW<br>Atlanta, Georgia 30303 | Arkansas, Louisiana, Mississippi, Alabama, Georgia, Florida, North Carolina, South Carolina, Tennessee, Kentucky, Puerto Rico |
| U.S. Fish and Wildlife Service<br>One Gateway Center, Suite 700<br>Newton Corner, Massachusetts 02158 | Virginia, W. Virginia, Maryland, Delaware, Pennsylvania, New Jersey, New York, Vermont, New Hampshire, Maine, Massachusetts, Connectiuct, Rhode Island |
| U.S. Fish and Wildlife Service<br>P.O. Box 25486<br>Denver Federal Center<br>Denver, CO 80225 | Montana, Wyoming, North Dakota, South Dakota, Nebraska, Iowa, Utah, Colorado, Kansas, Missouri |
| U.S. Fish and Wildlife Service<br>1011 E. Tudor Road<br>Anchorage, Alaska 99507 | Alaska |

Table F.1. Cont'd

IN ALL CASES NOTIFY:

Chief, Permit Review Unit
National Park Service - AIR
P.O. Box 25287
Denver, CO 80225

DOI - FWS, Division of Refuge Management
Branch of Planning
Air Quality Specialist
18th & C Streets, NW
Washington, D.C. 20240

Notify FWS Refuge Manager at:

Bering Sea
Clarence Rhode National Wildlife Range
Box 346
Betnel, AK 99559

Simeonof
Izembek
Pouch #2
Cold Bay, AK 99571

Tuxedni
Kenia National Moose Range
Box 2139
Soldotna, AK 99669

Chassahowitzka
Route 2, Box 44
Homosassa, FL 32646

St. Marks
Box 68
St. Marks, FL 32355

Wolf Island Georgia Coastal Complex
Box 8487
Savannah, GA 31402

Okefenokee
Box 117
Waycross, GA 31501

Delta-Breton
Venice, LA 70091

Moosehorn
Box X
Calais, ME 04619

Seney
Seney, MI 49883

Mingo
Rural Route 1, Box 9A
Puxico, MO 63960

UL Bend
Charles M. Russell
Box 110
Lewistown, MT 59457

Medicine Lake
Medicine Lake, MT 59247

Red Rock Lakes
Monida Star Route, Box
Lima, MT 59729

Brigantine
Great Creek Road, Box
Oceanville, NJ 08231

Bitter Lake
Box 7
Roswell, NM 88201

Bosque del Apache
Box 1246
Socorro, NM 87801

Swanquarter
Mattamuskeet
Route 1, Box N-2
Swanquarter, NC 27885

Lostwood
Rural Route 2
Kenmare, ND 58746

Wichita Mountains
Route 2, Box 448
Indiahoma, OK 73552

Cape Roamin
Route 1, Box 191
Awendaw, SC 29101

Table F.2. June 1982 Forest Service - Mandatory Class I Areas by State and Contact Key

| State | Area | Contact Key Page 64 |
|---|---|---|
| Alabama | Sipsey Wilderness | 1 |
| Arizona | Chiricahua Wilderness | 2 |
| | Galiuro Wilderness | 2 |
| | Mazatzal Wilderness | 2 |
| | Mount Baldy Wilderness | 2 |
| | Pine Mountain Wilderness | 2 |
| | Sierra Ancha Wilderness | 2 |
| | Superstition Wilderness | 2 |
| | Sycamore Canyon Wilderness | 2 |
| Arkansas | Caney Creek Wilderness | 1 |
| | Upper Buffalo Wilderness | 1 |
| California | Aqua Tibia Wilderness | 3 |
| | Caribou Wilderness | 3 |
| | Cucamonga Wilderness | 3 |
| | Desolation Wilderness | 3 |
| | Dome Land Wilderness | 3 |
| | Emigrant Wilderness | 3 |
| | Hoover Wilderness | 3 |
| | John Muir Wilderness | 3 |
| | Kaiser Wilderness | 3 |
| | Marble Mountain Wilderness | 3 |
| | Minarets Wilderness | 3 |
| | Mokelumme Wilderness | 3 |
| | San Gabriel Wilderness | 3 |
| | San Gorgonio Wilderness | 3 |
| | San Jacinto Wilderness | 3 |
| | San Rafael Wilderness | 3 |
| | South Warner Wilderness | 3 |
| | Thousand Lakes Wilderness | 3 |
| | Ventana Wilderness | 3 |
| | Yolla-Bolly-Middle-Eel Wilderness | 3 |
| Colorado | Eagles Nest Wilderness | 4 |
| | Flat Tops Wilderness | 4 |
| | LaGarita Wilderness | 4 |
| | Maroon Bells-Snowmass Wilderness | 4 |
| | Mount Zirkel Wilderness | 4 |
| | Rawah Wilderness | 4 |
| | Weminuche Wilderness | 4 |
| | West Elk Wilderness | 4 |
| Florida | Bradwell Bay Wilderness | 1 |
| Georgia | Cohutta Wilderness | 1 |
| Idaho | Hells Canyon Wilderness[1] | 5 |
| | Sawtooth Wilderness | 6 |
| | Selway-Bitterroot Wilderness[2] | 7 |
| Minnesota | Boundary Waters Canoe Area Wilderness | 8 |
| Missouri | Hercules-Glades Wilderness | 8 |

Table F.2. (Cont'd)

| State | Area | Contact Key Page 64 |
|---|---|---|
| Montana | Anaconda-Pintler Wilderness | 7 |
| | Bob Marshall Wilderness | 7 |
| | Cabinet Mountains Wilderness | 7 |
| | Gates-of-the-Mountains Wilderness | 7 |
| | Mission Mountains Wilderness | 7 |
| | Scapegoat Wilderness | 7 |
| | Selway-Bitterroot Wilderness | 7 |
| Nevada | Jarbridge Wilderness | 6 |
| New Hampshire | Great Gulf Wilderness | 8 |
| | Presidential Range Dry River Wilderness | 8 |
| New Mexico | Gila Wilderness | 2 |
| | Peco Wilderness | 2 |
| | San Pedro Parks Wilderness | 2 |
| | Wheeler Peak Wilderness | 2 |
| | White Mountain Wilderness | 2 |
| North Carolina | Joyce Kilmer-Slickrock Wilderness[4] | 1 |
| | Linville Gorge Wilderness | 1 |
| | Shining Rock Wilderness | 1 |
| Oregon | Diamond Peak Wilderness | 5 |
| | Eagle Cap Wilderness | 5 |
| | Gearhart Mountain Wilderness | 5 |
| | Hells Canyon Wilderness[5] | 5 |
| | Kalmiopsis Wilderness | 5 |
| | Mountain Lakes Wilderness | 5 |
| | Mount Hood Wilderness | 5 |
| | Mount Washington Wilderness | 5 |
| | Strawberry Mountain Wilderness | 5 |
| | Three Sisters Wilderness | 5 |
| Tennessee | Joyce Kilmer-Slickrock Wilderness[6] | 1 |
| Vermont | Lye Brook Wilderness | 8 |
| Virginia | James River Face Wilderness | 1 |
| Washington | Alpine Lakes Wilderness | 5 |
| | Glacier Peaks Wilderness | 5 |
| | Goat Rocks Wilderness | 5 |
| | Mount Adams Wilderness | 5 |
| | Pasayten Wilderness | 5 |
| West Virginia | Dolly Sods Wilderness | 8 |
| | Otter Creek Wilderness | 8 |
| Wisconsin | Rainbow Lake Wilderness | 8 |

Table F.2. (Cont'd)

| State | Area | Contact Key Page 64 |
|---|---|---|
| Wyoming | Bridger Wilderness | |
| | Fitzpatrick Wilderness | |
| | North Absaroka Wilderness | |
| | Teton Wilderness | |
| | Washaskie Wilderness | 5 |

[1]Also partially in Oregon
[2]Also partially in Montana
[3]Also partially in Idaho
[4]Also partially in Tennessee
[5]Also partially in Idaho
[6]Also partially in North Carolina

Table F.2. (Cont'd)

CONTACT KEY

| Key | Address | Telephone |
|---|---|---|
| 1 | Regional Forester<br>Forest Service-Region 8<br>1720 Peachtree Road, N.W.<br>Atlanta, GA 30309 | (404) 881-4243<br>(Wayne Ruziska)<br>FTS: 257-4243 |
| 2 | Regional Forester<br>Forest Service-Region 3<br>517 Gold Avenue, S.W.<br>Albuquerque, NM 87102 | (505) 766-3002<br>(Dave Aldrich)<br>FTS: 474-3002 |
| 3 | Regional Forester<br>Forest Service-Region 5<br>630 Sansome Street<br>San Francisco, CA 94111 | (415) 556-6082<br>(Jim Nandigo)<br>FTS: 556-4337 |
| 4 | Regional Forester<br>Forest Service-Region 2<br>11177 W. 8th Avenue<br>Box 25127<br>Lakewood, CO 80225 | (303) 234-4276<br>(Dennis Haddow)<br>FTS: 234-4276 |
| 5 | Regional Forester<br>Forest Service-Region 6<br>319 S.W. Pine Street<br>P.O. Box 3623<br>Portland, OR 97208 | (503) 221-2931<br>(Donna Lamb)<br>FTS: 423-2931 |
| 6 | Regional Forester<br>Forest Service-Region 4<br>324-25th Street<br>Ogden, UT 84401 | (801) 626-5508<br>(Jim Moore)<br>FTS: 586-5508 |
| 7 | Regional Forester<br>Forest Service-Region 1<br>Federal Building<br>Missoula, MT 59807 | (406) 329-3594<br>(Ron Russell)<br>FTS: 585-3594 |
| 8 | Regional Forester<br>Forest Service-Region 9<br>633 West Wisconsin Avenue<br>Milwaukee, WI 53202 | (414) 291-3342<br>(Harry Parrott)<br>FTS: 362-3342 |

# Appendix G

## Draft Summary of the National Park Service Requirements Applicable to Class I Areas (Under Review)

All the requirements of Title 40 of the Code of Federal Regulations, Part 52, section 52.21 (40 CFR 52.21) are applicable. Those requirements that the National Park Service (NPS) and Fish and Wildlife Service (FWS) will especially be reviewing are discussed in this section. Under a cooperative agreement with the FWS, the NPS Air Quality Division is providing technical review of PSD permit applications that affect FWS Class I areas. Therefore, the guidance provided herein applies to the FWS Class I areas as well. Based on the technical review, recommendations are drafted and forwarded to the FLM.

Air Quality Review [40 CFR 52.21(k)]

The permit application must contain an air quality analysis that analyzes the effect of the new source or major modification on the class I increments. The applicant shall base the air quality review on approved models as specified in 40 CFR 52.21(l) (Guidance on Air Quality Models). All assumptions for the analysis should be explicitly stated, and sufficient information on modeling input should be furnished so that the model analysis can be duplicated by the NPS. The model must make maximum use of meteorological data as specified in the referenced Guideline on Air Quality Models. If the analysis indicates violations of class I increments, the application must attempt to prove that there would be no damage to air quality related values (AQRVs). The applicant may wish to discuss the air quality analysis with the National Park Service Division (P.O. Box 25287, Denver, CO 80225) before doing the air quality review to be sure that the model will adequately predict the impact on the class I area and its AQRV's.

Monitoring [40 CFR 52.21(m)]

A complete permit application must contain preapplication air monitoring data. In general one year of data is required. The National Park Service Air Quality Division should be contacted to facilitate installation of monitoring equipment in NPS class I areas. Initiation of air monitoring studies in the National Parks originates in this office which in turn seeks the cooperation of the appropriate NPS Regional Office and Park Superintendent. This office will also coordinate monitoring efforts with the appropriate FWS authorities, if applicable. Since there are monitoring programs underway in several parks, contacting the Air Quality Division can help avoid duplication of effort.

Source Information [40 CFR 52.21(n)]

The application must show that all sources have applied best available control technology (BACT) for each pollutant emitted. In general, the source parameter information required by the State or EPA will suffice for the NPS permit review.

Additional Impact Analyses [40 CFR 52.21(o)]

Because the Federal Land Manager has an affirmative responsibility to protect air quality related values in class I areas and to consider whether a proposed source or modification will have an adverse impact on such values, the NPS and FWS are most interested in additional impact analyses required under 40 CFR 52.21(o). Specifically the applicant should provide an analysis of the impairment to visibility, soils, flora, and fauna that would occur as a result of the source or modification and general commercial, residential, industrial, and other growth associated with the source or modification. Also, an air quality impact analysis is required to project the result of general commercial, residential, industrial, and other growth associated with the source or modification.

Analysis of the potential adverse impacts on soils, flora, and fauna should include existing vegetation types, the percent cover and biomass, spatial distribution and land use. Rare and endangered species and acidic wetlands should also be identified. Ozone concentrations and estimates of fluoride and heavy metal emissions must be supplied with pollutant baseline concentrations and pollutant contribution from all sources.

The application must include an analysis of potential visual impairment caused by the project including effects on visual range, contrast changes, and atmospheric discoloration. The magnitude, frequency, and duration of the impairment must be specified. These analyses should be in accordance with the regulations published in the December 2, 1980 FEDERAL REGISTER. Guidance for estimating visibility impairment is available from the EPA (Workbook for Estimating Visibility Impairment, EPA 450/4-80-031). Pictorial presentation of the results using photographs, computer simulations or artist's conceptions would be beneficial.

To assist the applicant in performing these additional impact analyses, the NPS and FWS will provide to the applicant, within 60 days of his request, a list of sensitive receptors in the potentially impacted class I area. The applicant should submit the request to the Park Service Air Quality Division.

* U.S. GOVERNMENT PRINTING OFFICE: 1982 361-060/4050

UNITED STATES
DEPARTMENT OF ENERGY
WASHINGTON, D.C. 20585

OFFICIAL BUSINESS
PENALTY FOR PRIVATE USE, $300

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